THE RICE INSTITUTE PAMPHLET

Vol. XXIX April, 1942 No. 2

Rockwell Lectures on Religious Subjects
by William Ernest Hocking

Published by
THE RICE INSTITUTE

A university of liberal and technical learning founded by William Marsh Rice in the City of Houston, Texas, and dedicated by him to the advancement of Letters, Science, and Art

The Rice Institute Pamphlet is published at Houston, Texas, and is issued in January, April, July, and October. It was entered as second-class matter, April 15, 1915, at the post-office at Houston, Texas, under the act of August 24, 1912

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FOREWORD

OUR Western world has been investing in science with increasing zeal for upward of three hundred years. It is not alone pleased with this investment; it begins to regard it as its main stay, perhaps its all-sufficient security for the future. In view of the cumulative achievements of science, we fully understand the enthusiasm with which a new journal in the field of social science estimates its rôle in our present situation:

> Our culture is whirling in the maelstrom of irrational forces: they must be brought under control. There is only one power to attain this goal, the same power that brought under control the elementary forces of Nature, of wind, falling water, steam, electricity; and is about to unchain the limitless forces of atomic dissociation. The stupendous rise of American technique in agriculture and industry is due exclusively to science . . . There is not the least reason to assume that the same general law is not valid for social technique in the organization and government of society, just as well.[1]

At this same moment there is a tendency abroad to hale science into court to give account of its total cultural effect. There are those who trace to its influence a subtle but pervasive lowering of the dignity and meaning of life, by interpreting human behavior and its total frame in terms of inanimate necessity. There are others who fear that frail humanity has already more science than it can be trusted to use well.

Toward this tendency men of science have mixed feelings. They recognize the appalling situation which confronts mankind when the powers placed by science at human disposal fall into the hands of men of ill-will or of pure unmoral group-egoism. But they assert that this misfortune is not

[1]Professor Franz Oppenheimer in *The American Journal of Economics and Sociology*, Vol. I, No. 1.

one for which science is in the least responsible. It is not for science either to rid the world of unethical men, or to enclose the sphere of its own spread so that only the honest shall have its benefits. Many are not a little resentful that any question should be raised as to the net worth of the social incidence of science. Knowledge is inherently good; and the more truth man masters the better. The moral problem, including the problem of human dignity—whatever that means—must be dealt with by other hands.

In my judgment, neither the sole-trust of the sociologist, nor the accusation, nor the resentment is justified.

Not the sole-trust, for there is very fundamental reason to doubt whether the methods which have accomplished so much in physics are pertinent in their entirety to man or society.

Not the accusation, for it is both illogical and unjust to hold science responsible for achievements or failures in the field of values, which field it has never adopted as its own.

Nor yet the resentment, for our situation is far too serious for any but the most objective consideration. It often happens that a valuable corporate effort long continued has certain cumulative effects, of a wholly incidental order, unforeseen and unintended by its workers: such effects deserve the same careful appraisal as the original undertaking; and such an enquiry may reveal errors or unnecessary assumptions of method, whose correction may astonishingly free both science and society.

No one should be more eager to make that survey, and no one should be able to make it more dispassionately, than the scientist himself, in his capacity as philosopher. Pending that deed, perhaps some philosopher initiated into the spirit of science may render an interim work of interpretation.

Houston, April 2, 1942 WILLIAM ERNEST HOCKING

SCIENCE IN ITS RELATION TO VALUE AND RELIGION[1]

I

DILEMMAS OF SCIENCE AND CONSCIENCE

IT has been a happy arrangement of Nature in the timing of man's mental development that when his powers were feeblest, and the odds against his survival greatest, he seems to have been least worried about his own future. And this primitive self-confidence, born of ignorance and faith, must have been a factor in lifting him out of the economic cockpit. The same is true of his mental problems: the hardest among these have been the latest to make themselves felt.

Take for example the problem of language. Language is a magazine of signs, for the most part, in early time, of vocal signs for non-vocal meanings. Vocal noises are good materials for such signs because they are under immediate, voluntary control, and can be perceived in the dark and around corners. Most human tribes use gestures to help out their vocal signs, but no human tribe makes the gesture-language primary. But of course not all sounds are signs, not even all vocal sounds. Every human being has had to distinguish between the sounds that are signs and those which are just noises! Imagine the embarrassment of a

[1]Rockwell Lectures on Religious Subjects, delivered at the Rice Institute, March 31, April 1 and 2, 1942, by William Ernest Hocking, Ph.D., L.H.D., D.D., Th.D., LL.D., Alford Professor and Chairman of the Department of Philosophy at Harvard University.

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human mother if she had in some way to explain to her infant this distinction: "My dear child, sounds are of two kinds . . . etc." If language had to be used to get language started, we should never have emerged from this circle. Fortunately the problem was unfelt. It is only today that the full force of the difficulties of *theory* in the everyday use of language are dawning on us: we realize with horror that no child has ever had the primitive and all important words explained to him!

The same situation exists in the problem to which I am inviting your attention, the problem of value. Until very recently there has been no such problem, for we have simply taken the answers for granted; and this happy state of innocence has served practical purposes very well. It is, roughly speaking, the problem of the relation between what we want and what exists. Science is at hand to tell us what exists, not what we want. We are *supposed to know what we want,* and science then becomes the most systematic and effective magazine of knowledge pertinent to our getting what we want. Science is the repertory upon which technology draws. Science is an independent pursuit: its business is to master nature intellectually, to understand how the vast system operates and to enjoy that understanding. The freer science is the more likely it is to serve technical interests. In the great research laboratory at Schenectady it has been the tradition that men engaged there have been explicitly given free rein to do their investigating without regard for usable results. But the assumption of the whole effort, scientific and technological, is that we men know what we want. In other words, the problem of "values" has not been a conscious problem.

One evidence of this is that the very word "value" is a new word in the sense in which it is now usual to employ it.

It is common and ancient enough in its commercial and quasi-commercial uses. We know the value of the goods we buy, if we are prudent buyers. Every man who works for his wage or his salary is concerned to know what value is placed on his services. And quite apart from income a man desires to know how he is esteemed, that is, what his value is in the eyes of his community. The value of a man or of a thing is its *valoir,* its strength or power, its utility, how much it can achieve or command, its validity.

We come at once upon a wider use when we consider a problem of which education has only recently begun to take the measure, that of giving a student a just sense of "values." This includes a wise judgment of quality among the goods on the market, but it goes beyond that to a judgment of the things worth pursuing, of what have been called the "ends" of life. Education in America has been highly useful: we have been supplying our students with the fundamental techniques and with highly competent information about the means to attain their ends. In all this we have been taking for granted that they too *know what they want,* know what ends they intend to pursue, know the relative values of these ends. We are only now awakening to the fact that the knowledge of the values of ends is what the ancients called "wisdom"; and that we have been assuming either that wisdom of this sort is a kind of instinctive gift of the species or that every student will pick it up in the course of his growth, if he has a good home and good company. The extreme difficulty of the problem of teaching values is striking us now with full force.

But the term "value" has taken a further step of generalization. It now includes economic values, moral values, aesthetic values, truth values, as well as the elements of value in the simple pleasures, goods, and activities of the

day's program. Why is its meaning so broadened? I confess that in this wide scope it has become almost unmanageable. It includes so much that it has become vague and slippery. But there is a reason, namely, that it has come to stand for a deep-going contrast. The world is seen to have two aspects, the aspect of *fact* and the aspect of *value*. The term "value" has to spread itself to accommodate everything that is not pure fact, everything that has color, interest, meaning, quality. The word "fact" then has to purify itself of all elements of preference or feeling in order to hold its strict objective and solid character. The work of the jury, as distinct from the work of the judge, was once defined on the basis of this distinction: the jury was to determine the facts, the judge was to estimate the meaning of the facts and attach the due penalty; the judge was the evaluating officer. But although this line has been all but obliterated in judicial procedure, it remains in some of our more recent divisions of the process of enquiry. We have our Fact Finding Commissions, whose work is preliminary to our Commissions of Appraisal. It is assumed that the facts can be determined in abstraction from any commitment as to their worth. This, of course, is not strictly the case; for the fact-finders only know what facts to collect, if they have some idea what they mean. In historical and social matters, one might go so far as to say, there is no such collection as "the facts," first because the items that might be assembled are infinite in number, and second because we can never find a social fact except through the mouth and eye of some person who has an opinion about it. In traveling through the Near East some years ago, I attempted to get at certain facts about the French administration of Syria: but one Frenchman who sincerely tried to help me said at the end of a long series of questions: "You must remember the saying, which applies with espe-

cial force to everything in the East, 'Ici il n'y a pas des faits, *il n'y a que des versions*.' " Every so-called fact is an interpretation. The difference of function remains, for the same data will provoke different judgments according to the standards of value of the appraisers. For instance, if you tell me that our state spends fifty million dollars a year on higher education and produces just one man per year of first-rate powers of leadership, I have to say that this fact by itself does not condemn our education; or if you say that the divorce-rate has increased three hundred per cent in a quarter century in America, I have to say that these facts, if they are facts, do not of themselves show that marriage is a failure. You recite the facts as though they settled a question of worth: but the two operations of determining facts and determining values retain a degree of independence.

The pertinence of this distinction to our present theme lies in the circumstance that science has traditionally taken the field of fact for its province and has left the field of value to other agencies. This division of labor has been to some extent deliberate on the part of science and for very good reasons, but its full import has only recently dawned on us because of this slow development in the concept of value and of the problems connected with it.

1. MEANING OF THE TERM "VALUE"

One of the good reasons for the disposition of science to keep clear of value is the lack of precision in the generalized notion of value. It is so difficult to define that it has been judged an indefinable. Perhaps the best definition is the negative one we have already used: value is not fact, fact is not value.

If we were to undertake a positive account, we should be likely to find ourselves working in a circle: a value is that

character of being or experience which requires to be estimated in terms of its worth. This is a definition which anyone will understand if he already knows what worth and value are, not otherwise; yet we might invite anyone to do better.

Shall we say that value is that whose absence would leave the world neutral, devoid of interest, wholly indifferent? Or that value is that which polarizes the whole world of experience into the welcome and the unwelcome, the agreeable and disagreeable, the attractive and the repulsive the good and the evil, and thus banishes all indifference? Or that value is everything that lends quality and therefore calls for preference in the world; everything that makes the world a region in which beings with *wills* can exist, beings having to choose and act, for without value there would be no conceivable ground for choice or action, there would be no better course and no worse course, no wisdom and no folly? These statements are true; they do not amount to definitions; they merely help us to locate what we mean by value by giving it a context.

If we attempt to make the context the nub of a definition, and say that value is the object of preference, or of emotion, or with my colleague Professor Ralph Perry, of any interest, this would be putting second things first: we are *moved* by value because it is value; it is not a value because we feel emotion toward it. Otherwise our feelings and interests would determine what values are, and there would be no appeal from our preference. Since there *can* be an appeal from my taste, or even from my type of conscience, the final and determining point of value cannot be in my mode of response. But this is perhaps as near to a definition as we are likely to come, or need to come for the purposes of our own argument: value is that aspect of the world which appears when there are *wills* about, that is to say, minds with

choices to effect and decisions to make. It stands in contrast to the purely theoretical aspect of the world; though for conscious beings the two are inseparable. Every sensation we experience is colored to some extent by the qualitative touch of the agreeable or disagreeable, and by that further elusive contrast which, with a touch of mystery, we very probably read into it—the favorable or the unfavorable, the ominous or the propitious. And this is equivalent to saying that there is no phase of experience which is pure fact, none without a capacity to touch the springs of feeling and volition. There are some who would even reverse the order of fact and value, and say that—at least for attention—there are no sensations, no observations, unless there are first concerns, doubts, challenges, fears, hopes, of an enquiring and anxious will. We shall be satisfied with holding the balance even; no fact without value, no value without fact.

2. ASSUMPTIONS ABOUT VALUE

It is perhaps just because value is so difficult to define that we carry on our lives, not by analyzing it nor reasoning about it, but by making assumptions about it. A value-assumption which is neither reasoned nor open to reason may be called a prejudice.

We assume, for example, that it is good to live; or that being alive is, in general, better than not being alive. Schopenhauer tried to prove the contrary; the fact that he made this attempt is an evidence of the prejudice in favor of living.

We assume that it is good to save life; this is the professional prejudice of the physician, made into an element of the fundamental ethical code. This is not a point which either we or the physician attempts to prove.

We are inclined also to assume, as if by way of a corol-

lary from the first prejudice, that it is good to increase life; and that births are therefore always occasions for congratulation. We do not feel it necessary to prove this point.

We assume that the several functions of normal living are good: among others, that the use of one's head is a good thing, and therefore, if the head is for thinking and thinking is for controlling nature, that it is good to control nature; and hence, that it is right and normal to be in a position of mastery toward nature and toward things, and, therefore, that property is a good thing and a right thing.

Extending this idea a little bit, we find that it is good to *extend* our control *through knowledge,* as far as that control can go. There is nothing which we "ought" not to know; and nothing which we "ought" not to control. This prejudice brings us into sharp opposition to the traditional prohibition of the Garden of Eden: it is good to know good, and it is also good to know evil—so we think: it is good to control both of them by knowing them. And if somebody objects that to know evil in any thorough way is to be evil, we are slightly jarred, but persist in our prejudice.

Take a step farther. It is good to master nature; it is good to master *ourselves* by knowledge. It is good to control life: it is good to control the increase of life—birth control; it is good to control the end of life—death control, which is another name for rational suicide and rational euthanasia. Here our assumptions come into conflict with our earlier assumptions, that life is always good and its increase always good. When assumptions thus conflict with each other, prejudice ceases to be a sufficient guide of life, and we are compelled to begin to do some reasoning about this field of value —a field so self-evident that every college student may be assumed to know what he wants, and so difficult that we cannot even define the term!

3. DIFFICULTIES OF PROOF IN THE FIELD OF VALUE

It is just here, however, that reasoning seems especially futile. What can reason take hold of for a premiss? And if there are no certain premisses, conclusions will differ, and we come into the common despair of our time which accepts the situation that values are to a large extent *subjective*. The field of taste is given over to relativity; and just as some British worthy gave it out as his opinion that everyone is entitled, as a matter of natural right, to his own notions of spelling, so the common opinion today is that everyone is entitled to his own notions of moral value.

This would constitute one emphatic difference between the field of science and the field of values; for in science the whole meaning of the steady advance is that a corporate acceptance of scientific results can be anticipated, and even compelled, because both the ultimate data and the methods of reasoning from them belong to the field of verifiable evidence.

Some years ago, I attempted to teach a course in ethics at Harvard. Midway in the course, some wild fancy moved me to ask the students, in the course of an examination, to comment on the enterprise, under the promise of diplomatic immunity. A lad named Cohen wrote as follows:

"I do not believe that the teaching of ethics is a useful undertaking. The trouble is that you cannot prove the important points. You cannot prove that a man ought to love his neighbor. And if you could prove it, that proof would not in the least help him to do so." He added, retrospectively, "I can understand how a Jesus Christ or a Nietzsche (neither of whom tried to prove anything) could turn the world upside down; but I cannot see how any college professor could turn the world upside down."

This sagacious comment went directly to the center of the whole problem of *thinking about values,* that is to say, of rescuing them from the play of prejudice and the despair of subjectivity and relativity. Cohen was evidently inclined to give the matter up. For my part, I was considerably impressed, not to say jarred, by the force of his remark. In reporting the matter to the class, I pointed out that Cohen's view, though despairing of the professor, was not wholly without hope for the race: there *were people* who could accomplish something in this field; for "turning the world upside down" involves securing some degree of consent to one's proposed transvaluation of values. These men were once called prophets; nowadays we are more likely to call them poets, preachers, or possibly fanatics. They are not philosophers; and they are not scientists. It is this latter point which concerns us here.

The presumption is that science ought not to be expected to help us about values. This is not its field. It has its *métier,* which is to find the facts, wholly without regard to their value. It is a part of its duty to forget values in the pursuit of objective truth. It is a part of its justified specialization to leave the estimation and use of the facts to others. If this is the case there is no such thing as a "science of values" in the strict sense of the term science.

4. SCIENTIFIC METHOD AS EXCLUDING CONSIDERATIONS OF VALUE

But the most vital reason which leads science to keep clear of questions of value lies in its carefully-built method of procedure. The glory of science is in its method. This method may be summarized in three principles:

First, the observation of fact. Facts must be observed with the utmost care to eliminate all human preference, and

all intrusion of the personal equation, in the effort to be perfectly faithful to what is given.

Second, the discerning of *law* in fact, the process of induction. An individual fact, for the scientist, is commonly taken not as an item of narrative, but as an example of a type. It reveals some general truth about the behavior of things. The reading of that truth is not a matter of direct perception, but of hypothesis; the hypothesis needs to be verified; and this verification needs to be confirmed by the scientific community.

Third, a principle about the kind of hypothesis which will *not* be admitted. Purposes will not be considered. Bodies do not fall because of any desire to go downward; nor do bodies approach each other because of any affection for one another, though the words attraction and repulsion seem to register an ancient assumption of this sort. Purposes are replaced first by "forces," and "forces" by "causes"; and then for the stricter scientific sense, all agencies are excluded from consideration, so that the formulation of the facts of change may be unobscured by any metaphysical conception. Hypotheses must be limited to rules of succession among phenomena or events.

This method is simplicity itself, and yet, during the time it was being worked out, it had to be fought for. The inveterate human disposition to read events in terms of some purpose, whether of God or of man or of the things themselves, died hard: Aristotle was authority for the pertinence of "final causes" to the events of Nature. In his view all things were striving toward something; this inner striving was their life; as running water may be conceived to strive toward a lower level, so for the great Greek all objects were tending toward what he called pure form. Modernity had to dispel this fancy in order to see in its clarity another sort

of pure form, the mathematical form of the actual process of change, not as something aimed at, but as something actually realized in all natural change.

The method which was directed toward this object brought unity and cleanness into the world picture. Everything it relied on was *public*: its observed facts and inferred laws submitted themselves to verification. There was no guessing what the secret motives of Nature might be; there was no room for black arts, nor for learned doctors of hidden mysteries. Humanity escaped from its own provincialism of value-judgment. Nature contains nothing disorderly, nothing vile—no, nor anything lovely as we count loveliness. The mind of man spares itself the infinite possible false-scents involved in seeking purposes which can never be seen nor verified as explanations for its facts, and from which no predictions can ever be drawn.

Nature seemed cleared as if from pestilence, and the enthusiasm for the sharable and knowable carried the human mind toward an unmatched era of conquest.

5. HAS SCIENCE NOTHING TO SAY ABOUT VALUES?

With the best will in the world, however, science does encounter the field of values in one or two places.

In the first place, like every other human activity, science takes for granted certain values toward which its own work is directed. It assumes the value of knowledge. It lives on that prejudice—among those we have mentioned—that it is better to know than not to know, and to know things as they are, whether they are good facts or evil facts, or facts of mixed possibilities, as most facts are. It also assumes that its own results will be helpful to other men in the pursuit of their ends, into whose value it does not enquire, though it

makes the general assumption that they will be decent and not noxious: it assumes that many of these ends will be common goods for all mankind, such as the achievements of all the useful arts, medicine, engineering, and the like. And then, further, it sees its own labors as having an incidental value in uniting scientific workers the world over in a common front dealing with the common problems of mankind. Thus, within its own field, it illustrates prophetically the picture of a world-community in which there is a genuine fraternity, a high standard of integrity, and a career open to talents from whatever quarter of mankind. These values are, of course, no part of the *contents* of science—they are values which gather round the activity of the scientific worker and sustain his toil and sacrifice.

But then science encounters value in a more concrete way, for it comes upon man as a fact in the world, and man is a creature that pursues values. Science therefore is bound to discover the fact of prejudice. It reports the common preferences of mankind: of life to death, of being on friendly rather than on hostile terms with one's neighbor, of affluence to poverty, and the like. In reporting these facts it does not pass judgment upon them. It deals with them with its usual sobriety and detachment. Even in dealing with human passion it must make a dispassionate report, holding the advantage of its "objectivity"; and this making-an-object of our desires and emotions is doubtless a curative attitude, tending to relieve us of our infatuations, and to achieve a greater dignity in our expressions of feeling. Science thus does us the service which any good friend does who kindly laughs at our excitements, and brings us to a steady mind. It does for us something which Stoicism tried to do for its devotees when it admonished them to feel as coolly toward

their own joys and sorrows as they would toward the joys and sorrows of others.

Above all, science in recognizing the facts of human valuations, refrains from using the word "ought." As a reporter, it sees no meaning in judging that the facts ought to be other than they are.

In particular, as a veracious reporter, science has to declare that these facts of valuation are, so far as it can discover, *local* facts. They appear only in men and animals. They are therefore transitory: the world before the advent of animals showed no sign of concern about values, and if the animal series vanishes from the universe some day, as is most probable, the phenomena of valuation will vanish with it. The "real" world, using this term for the underlying course of things, as revealed in physics and astronomy, is devoid of interest in value and presumably of value itself.

The conclusion is drawn that value is a subjective realm, or as Bertrand Russell puts it, it is our kingdom. It exists only for us, and we are free to make whatever rules our experience may suggest for achieving the most in quantity and the best in quality among what we find to be goods.

For the world outside this private scene, the story is indeed a bleak one. But we have to face it. Let Mr. Russell describe it:

> That Man is the product of causes which had no prevision of the end they were achieving; that his origin, his growth, his hopes and fears, his loves and his beliefs, are but the outcome of accidental collocations of atoms; . . . that all the labors of the ages, all the devotion, all the inspiration, all the noonday brightness of human genius, are destined to extinction in the vast death of the solar system, and that the whole temple of Man's achievement must inevitably be buried beneath the débris of a universe in ruins—all these things, if not quite beyond dispute, are yet so nearly certain, that no philosophy which rejects them can hope to stand.[1]

[1]Bertrand Russell, *A Free Man's Worship* (Portland, Me.: The Mosher Press, 1923), p. 6.

6. SCIENCE AND CONSCIENCE

So far, the relation of science to values is one of mutual independence. Science has no desire nor need to interfere in the phenomena of human choice. But benevolent neutrality is a hard position to maintain, whether in the field of public affairs or in the field of thought. There is at least one region where there is danger of a clash between science and our value habits. That is the region we have indicated by the word "ought." Science, we said, has no use for that word in its treatment of values. But more than that, it is doubtful whether it has any use for the word at all, except to record the fact that some men still perversely use it. If men's valuations are natural phenomena they are what they have to be: it is not only idle, it is perhaps mischievous, to suggest that they ought to be other than they are.

Return to this question of loving one's neighbor: and let us extend the difficulty we encountered a little while ago. Science, I think, would in general agree with the position of my student thus extended: "You cannot prove that the Nazis *ought* to love the Poles and the Jews as themselves." If the facts are that they do not, it is wholly meaningless to import the word "ought" into the picture.

Let us take another step. Is there not an inherent aristocracy in nature, derived from the perspective in which each self views the world? What we call our "social instinct" leads us always to prefer friendly relations and mutual help with anybody who happens along: so much belongs to our original value-prejudice. But any positive concern for other people begins at the center and fades away, both with physical distance and with distance in kind. Every person and every group tends to regard those who are outside the "warm" circle as fit to be exploited. Hence in any large

group, such as a modern state, not connected by any ties of blood, the degrees of regard of man for man run through a wide gamut, and any democracy which assumes a relative equality of regard will have an uphill fight for its life. There was once a religion which made this distribution of regard a duty. But science has no intention of usurping the functions of religion; and for the purely scientific point of view, there is no "ought" in the premisses.

It is enough to say that for science, the word "ought" becomes a word of dubious meaning, since "ought" always quarrels with the facts. The tendency of science is to reinterpret all propositions containing this word into propositions concerning fact. Thus "You ought to pay your debts" becomes something like this:

> Most men find that paying their debts is a method of behavior which avoids definite evils, such as friction and legal action, and secures certain goods, such as esteem and good feeling. They accordingly become conditioned to this method, as a secondary habit; and are inclined to formulate it as a law.

Such reinterpretation of "ought" as fact is the direction taken by the most recent school of realists in ethics and law; it prides itself on its accord with the general principles of science. Conscience is reluctant to accept the two proposals as equivalent. We must examine with some care how this difficulty arises.

7. SCIENTIFIC METHOD APPLIED TO MAN

The embarrassment begins when the scientific method, so successful in the fields of physics and astronomy, is turned upon man himself. This was bound to happen, for man, too, is a member of the natural order. And the difficulty is that when man becomes both the observer and the object observed, as is the case with psychology and sociology, not

one alone but all three of these points of method seem to go wrong.

First, observation. It is not so easy to observe oneself as to observe something else. It is not nearly so easy to observe the mind as it is to observe the body. And if one can be said to observe one's *own* mind, what he there discovers is not a public object—no one else can come along and certify his report. If Tycho Brahe in 1572 sees a new star in Cassiopeia, he can summon his household to witness that his senses are not deceiving him. But no one can testify to the emotions which arise in this trained observer when this first super-Nova noticed by western eyes appears as if by magic in a quiet neighborhood of the sky! This defect in the very foundations of mental science is so great that psychology drifts inevitably toward behaviorism. One can always observe muscular behavior, and sometimes neural behavior; and one is tempted to disparage consciousness itself in order to furnish the new science with a measurable and verifiable object.

Second, the discerning of law. The difficulty here is in the question whether mental processes follow laws, as physical processes do. There are reflexes and habits which seem as much physiological as mental; but these are the least characteristic phases of the human mind. Feeling, imagination, moral conflict, decision appear to be in some sense irregular and free.

But the chief difficulty lies in the third point. If no natural phenomena are to be explained by purpose, what about these human phenomena which certainly are purposive? Empirical truth itself requires us to report the fact of purpose where we find it. And if one can find no stable causal laws for human activity, the reason may be simply that the law of cause is replaced by the law of purpose. We are put to an

awkward dilemma: we must either go back, in this case, on our hard-earned prohibition of purposive hypotheses, or else on what the plain facts of the case appear to show. We must disobey principle 1 or principle 3! It is not surprising that in such a conflict of loyalties, some scientists of the mind have taken the line that purpose is a sort of subjective illusion—that cause rules the world, as well in the case of man as in the case of atoms. That is why many psychologists—some say a majority of psychologists—are interested in reducing human value-prejudices to a special kind of fact. And that is why the use of the word "ought" becomes for such thinkers a bit of outworn superstition.

8. CONSEQUENCES OF TURNING "OUGHT" INTO FACT

The first result of this transformation is a great relief. Moral judgments are notoriously troublesome, disquieting to the tender conscience, tending toward harshness and censoriousness toward others, sources of retributive excesses in punishment and almost equally loathsome excesses of flattery. When the "ought" is merged in the soothing calm of universal necessity, we no longer praise or blame, regret or congratulate, extol as noble or denounce as wicked—we are freed from remorse for our sins and from pride for our good deeds. The criminal is looked on with new eyes: we do not like what he does—that also is a fact—but, seeing that he too is a child of causal law, we take him to be an organism out of tune, to be readjusted and healed, not punished. This makes for toleration and kindness. Moral indignation is a distressing fever which we may now lay aside; into its place steps the wise solicitude of the physician.

The repercussions of this change are far-reaching. I suggest that we trace some of them in the field of criminology.

Criminology tends to merge with psychiatry; the criminal

becomes a case for study; his heredity and environment are carefully enquired into; mental and moral reactions are measured and tabulated; his type is classified, and treatment prescribed. His whole physical being and habits are scrutinized; vitamin and glandular deficiencies are remedied; he is brought into prime physical condition, as far as his diathesis will allow. Meantime, with all of this he has been receiving a good deal of attention, much more than the average good citizen gets; and whether he likes it or not he becomes, within the small community of the prison colony, the well-known Mr. So-and-So. Nothing is being said to him about justice: he is not asked to repent nor to repay. He himself may be willing to forgive and forget the past, since the local environment shows no interest in the matter. He is asked to take a cooperative attitude toward society; and within that local and surely benevolent sample of society about him he may pull himself up to do so.

Dr. Karl A. Menninger represents this new spirit in penology very well. In his book on *The Human Mind,* in speaking of the treatment of delinquents, he explicitly rejects the interest in justice. "Is typhoid fever just?" he exclaims: "What science or scientist is interested in justice?"

This dramatic question—which we can understand in the life of a physician whose sole business it is to help the patient—pulls us up to ask where we are. Can it be true that the interest in justice is outgrown? The drive for the health of the culprit is surely the most important advance in the treatment of criminals in a hundred and fifty years. Is it then inconsistent with being *also* interested in justice?

Let us try to realize how far we have come. The word "crime" as it becomes a scientific category becomes dulled to our imagination: not even the favorite bad men of the movie strips stir us deeply. Crime appears in particular

deeds, not always labeled as crimes, because the heart that thinks crime is inventive: crime simply takes advantage of the ever increasing vulnerability of any advancing society, which has to trust itself to a corresponding growth of good will and good faith. As we become increasingly civilized it becomes more and more true that any life can be attacked in a hundred ways, any property broken into, any child taken from the street, any career ruined, by the man who intelligently watches his chances. We cannot live and grow socially without trusting one another, and the criminal is simply the man who for his own desire plants fear in the place of that trust, and compels society to stand guard where it might be free to advance. He separates his sympathy from his victim; he separates it still more from the advance of human friendliness.

What do we want to do about crime? Wait till it has happened and then correct the criminal's hormones? Perhaps they are all right! Perhaps the trouble is simply that this healthy and intelligent man has adopted a rational philosophy of looking out for himself and his group, in a somewhat unconventional way, and the devil take the rest of us. Then what shall we do about him? Nobody is aided by our taking vengeance on him. But how would it do to express our belief —if we have it—that there is still a difference between right and wrong in this universe, and that wrong, which some men will always plot, is to be denounced as wicked? The time to enter our protest against crime is while it is being considered, as a clever move: and the only pertinent protest is to give it its right name, and attach to it its appropriate feeling, that of condemnation.

Let me not try to stir your latent wrath by setting up some favorite picture of my own of human meanness or depravity. Let you, reader, do that for yourself: is there anything men do under the shelter of propriety—of legality

itself—to cheat, maim, destroy, turn hope into despair—anything which you would like to rebuke as evil? Then the virility of your resentment may serve as your assurance that you are still alive! Justice, which is nothing but true judgment of behavior in respect to its moral quality, is the concern of every living citizen; and any man or group which sets itself aside from that concern is itself in need of medicine.

And this bears on the doctor's business. For the criminal is not cured until he regards his crime as a crime; and all the physical health you can induce in him will not make him a safe citizen until he looks at what he has done and hates it. Your pleasing forgetfulness, your skilled reconditionings, he knows to be preliminary to the main point; and he knows that, considered as a "case," he is still on the animal level in your eyes. The man who blames him, and sets a moral standard into his mind, does him far more respect—this he knows—than do you who dose him with thyroid, niacin, and thiamin, if at the same time you dodge the question of responsibility.

On the purely scientific level there is really no definition of mental health or disease. What right has anyone to take unhappiness and maladjustment as "abnormal" conditions? How do we know that a man who should see the actual conditions of life a hundred times more clearly than you or I do would remain "happy" and "adjusted"? Almost I think such a man *ought* to be at odds with the world, as Buddha and Christ were at odds with it. Those who feel the intolerable as intolerable may be exhibiting their point of genius. I am not prepared to say that all who commit suicide are the least perceptive of men: I know poets who have left life that way. Would you cure Tolstoi and Abe Lincoln of their inner torment at the wrongs they felt around them? Would we not do better to be curing our healthy and con-

tented masses? Science lends no sanction to the identification of moral health with "adjustment."

It is true that there is a certain understanding of man's nature, deep and percipient, which brings a certain forgiveness of wrong. As one grows older, one less and less expects perfection and more and more realizes that human idiosyncrasy goes with defect. One sees that the good life is made not by the fortunate discovery of ideal specimens here and there, but by the mutual supplementation of the very fallible. This is an insight which must touch the edge of the divine pity.

With this is often associated another form of tolerance, also a product of age, that of weariness and resignation. The moral passions are exacting: as one grows older one learns that no human strength can fight out all the issues that come one's way. No one man can change more than a fraction of the immeasurable sweep of world-events; and what one cannot change, one learns to be resigned to. This is weariness: it is a part of the sadness of age.

When men speaking in the name of science suggest to us that there is no "ought" but only an "is," it is our weariness and not our wisdom that tends to acquiesce. The distinction of right and wrong cannot vanish from the world until it has no more work to do: that time is far off. *Are we becoming a race of old men,* that the course of history is no longer charged with the contrast of good and evil, just and unjust? Is familiarity with scientific procedure, misread, making us as a civilization prematurely aged, resigned, morally obtuse, and therefore impotent?

Let the men of science in our generation see the gravity of this question, which arises from the very magnitude of their achievement, and they will answer in no uncertain terms the question, What science or scientist is interested in justice?

Science does have a power of healing, incidental to its

own work, which often passes unnoticed because it is unclaimed, but which has a definite relevance to our enquiry. There is something in the very nature of the discipline of scientific truth which tends to cure morbidity and dispel the bent to vice and crime. In the vast interrelated system of things which we call Nature, and in the relation of life to that system, there is a soundness and a majesty which inspire respect and even wonder; which rebuke pettiness and tend to destroy the perspectives of self-concern.

It was in view of these incidental aspects of science that Paul Carus developed what he called the "religion of science." Those were memorable words which Helen Culver used when she presented to the University of Chicago a million dollars from the estate of Charles Hull to realize President Harper's dream of a great biological laboratory:

> I have believed that moral evils would grow less as knowledge of their relation to physical life prevails—and that science, which is knowing, knowing the truth, is a foundation of pure religion.

It is not the function of science to aim at the cure of moral miasma; but there is reason to believe that as knowledge of the natural world becomes deep and proportionate, something of wisdom and nobility steals across into the character of the scrupulous observer: faithful observation tends to become reverent observation. And this means that one cannot prevent, even when one tries to escape value, the relations of things in their lawfulness and exactitude from taking on qualities over and above their factual character—such qualities as dignity and beauty.

What we do have to say in regard to such values as these is that they constitute no part of the content of science. Nor can science be called upon to pass judgment upon their place in the general scheme of human life. They are of great importance to the scientist as a man; they are, like other values, outside the body of science itself.

II

THE SCIENCES OF LIFE AND THE ETHICAL CODE

WE have taken it to be a legitimate division of labor in the world of thought if science confines itself to answering the question What exists? and leaves to some other hands the answer to the question What is good? or What ought to be? But we have also seen that when science turns its attention to man, and asks what the facts are in his case, it is bound to find among those facts man's valuations—his preferences and his conscience. What men do in fact prefer and approve is part of the factual picture of the world. By questionnaires and statistical methods it is possible to tabulate an average opinion on matters of value, or to plot a trend curve of moral judgments. And always men will find such data relevant to their own opinions on what is valuable or right; some will identify the average judgment with the normal judgment.

This process of extracting standards from facts obviously leaves us without a standard to judge or to improve the facts. In this sense it is literally an ethically passive or idle attitude, and leaves custom master of the field; while it puts those who would alter custom always in the wrong. It is a "realistic" attitude, one which takes the world as it finds it, refrains from deviating, still more from reforming, and makes its own adjustment to the way men and things are.

It has the natural disadvantage that custom at one time or place is not custom at another; hence realism delivers us

over to relativity. Slavery was right among the Greeks because it was the custom and was also factually approved; even Saint Thomas was inclined to follow Aristotle in his judgment on this point. But later on, the consensus wavered; Gallup polls of 1750 and 1800 and 1850 on this point would have showed increasing uncertainty. How then would realism extract from the facts a standard? In spite of ourselves we should have to recognize that the facts of prevalent opinion still leave the question What ought to be? unanswered.

Once we see this, we take the further step and say that no matter of fact, even of the facts of human opinion, can evade the further question whether it is right. No state of things or of thoughts is so well established that it can frown down the challenge, "Are you what you ought to be?" This free-lance question is always in order! And it is never to be settled by another appeal to the *status quo*.

We admit the gap between "is" and "ought"; there is no escape. But is there no bridge? At least, there are attempts, and from both sides of the gap. Men of science do build ethical codes, which seem to them inspired by the facts of the world; they cross over from "is" to "ought." And there are theorists of value, who explain the meaning of "ought" in terms of what exists; they cross over in the opposite direction. It may be that neither of these operations is defensible. But we are bound to examine them, not for the purpose of finding fault with them, but for the purpose of finding whether they are on the trail of some important connection between these two sundered interests. That will be the work of this second lecture.

We shall begin with the codes proposed by the scientists

or students of science. As a fact of biography, men of science have not alone set up codes for themselves but have sometimes published them and recommended them to others. We may go so far as to say that every scientist has an ethical code which defines his attitude toward his own work. This code can hardly be a scientific product, since it takes part in the creation of science; but there it is, as a highly effective and highly exacting demand. And beyond this, every scientist, as a man, has a code for his own conduct of life, derived from some source or other, often independent of his science but often sustained or illustrated by his results as a scientific thinker.

It is possible that the scientist is inconsistent in extracting ethical guidance from scientific fact; if so he would be showing himself human like the rest of us. But it is also possible that the assumptions he makes may show a connection between fact and value which we have not so far noticed. In either case we are bound to examine his procedures.

I. THE BIOGRAPHY OF A SCIENTIST

I have in mind a physiologist, a friend, who, in the interest of just this problem of science and value, was willing to turn autobiographical for a half hour. He felt his experience to be representative widely of science today; and I think he was right on this point. As to metaphysics, he professed to be agnostic, since his scientific training had emphasized the importance of being able to say "I do not know." He felt it possible to say, however, as a sort of premiss, that he is a "representative of an evolutionarily successful species"; and it was evident that he was extracting from this fact of success some sort of blessing of Nature upon his ways of reacting (feeling and acting). But he also

finds in himself reactions which have nothing to do with biological success, and so he confesses:

> I find myself reacting to complex situations as a whole, and responding . . . in ways which are inexplicable on any scientific basis. I never expect to understand most of the things I value most highly—the thrill of a sunset, or a symphony, or the love I have for certain persons.

When it comes to building an ethical code, he seems to trust these non-scientific ways of feeling, not only for himself, but for others. He goes so far as to say that it is an empirical fact that "there is such a thing as the good life." There is an empirical contrast between the lives of Socrates, Christ, Lincoln, on one hand, and Nero, Napoleon, Hitler, on the other. He can surely count on a large degree of emotional assent to this judgment; we shall have, however, to raise the question in passing, in what sense is this judgment empirical. For if goodness and badness are there in the facts in the same sense that Nazareth and St. Helena are there, ethical quality might become at once an object of science. But my friend is not proposing to leave this assertion unsupported, as a pure deliverance of the facts: he tells *why* he personally hates the social system associated with Hitler. There are certain values, "human dignity and kindnesses," which to him are "the most important things in life": Nazism threatens these values. And he believes that human history lends a certain corroboration to his personal scale of worths.

Is the validity of this scale, then, a matter of general agreement among men, or among reasonable men? Admitting as he does that there is at present a world conflict between "two irreconcilable viewpoints," one making the individual a means to the state as end, the other making the state a means to the individual as end—the fact of the conflict would make hazardous any appeal to a consensus

of opinion. If we are called upon to invest our lives and properties in an attempt to destroy Hitlerism, is it sufficient to point to the physiological fact that our reactions, sanctioned by our survival hitherto, are discovered to be hating reactions?

If this is all, then other groups of men, who find that their reactions, also sanctioned by their survival hitherto, set a state-compelled order and security above liberty, with its attendant difficulties and uncertainties, would have a similar ground for the other viewpoint, and there would be no way to settle matters but to fight it out: in the words of Justice Holmes,

> Between two groups that want to make inconsistent kinds of world I see no remedy except force.[1]

I detect, however, in my friend's words a sign of dissatisfaction with his own attempt to base a code of ethics on the simple physiological fact of preference, similar preferences among similar groups of men, for he goes on to give still another reason for his view: the totalitarian makes his state a "false god" because, as he says, it "prostitutes science" as well as philosophy and theology. If I may venture to translate this figure, it means that a science which is not free to serve truth precisely as it sees it, with no concern whatever to promote the good of a particular government, is *not science*. In other words, science is so identified with a certain chastity of motive that if it loses this virtue it loses its very being. If this is true, there is a certain dialectical necessity in our condemnation of Nazism, to which the Nazis also must come, and we begin to discern a logic in value which may rescue it in the end from the shakiness of factual preference. But, having knocked on this door, our

[1] *Holmes-Pollock Letters*, edited by Mark DeWolfe Howe (Cambridge: Harvard University Press, 1941), Vol. II, p. 36.

scientific friend does not enter it, and we are left with what we feel to be an admirable personal confession built on extra-scientific experience.

2. THE CODE OF FOLLOWING NATURE

I wish now to turn to certain codes avowedly based on science, which are offered for general acceptance. These are of two general types: one type, those which, viewing man as embedded in Nature, call upon him to take his guidance from Nature; the other type, those which set man in some contrast with the rest of Nature, and call on him to assert his own distinctive values.

The first type is brought into modern vogue by the development of biology and the vistas of evolution which go with it. The word "Nature" is an ancient link between fact and value. In the philosophy of Lao Tze, the great word is "Tao"; this mysterious symbol may be described as meaning the order of heaven and earth; a man is said to have Tao when he has this law within him, that is, to be right is to be natural. Wherever Nature is conceived as having her own laws which govern the growth of living things as well as the movements of the non-living, it becomes a standard of rightness to live "according to Nature"; and while, for us, it has become difficult to see what is "natural" for a self-conscious and therefore artificial creature like man, the word "unnatural" still stands for a severe condemnation. When the Stoics adopted the principle, "Live according to Nature," they were doubtless thinking of Nature as a living totality, in which thought as well as matter were present, so that the phrase "the intentions of Nature" has a literal meaning. For us, Nature has no intentions; yet it is as hard for a modern biologist as for Aristotle or St. Thomas to suppress the fancy that Nature

has given some broad hints about what sound and healthy behavior is.

For strict empirical observation the distinction of end and means does not exist. The roots of a tree draw in and construct sap, which serves the nutrition of the tree: this is cause and effect, not means and end. Yet, as Kant long ago remarked, the system of processes in any organism so distinctly supplement one another, aid one another, and conspire to the life of the whole, that an observer can hardly tell what an organism is without saying that it is an assemblage of functions in which each is a means to all the rest and to the whole as ends. Three times out of four when a biologist turns moralist, he takes this picture of interdependence, cooperation, and totality as his model.

Thus Professor S. J. Holmes of California writes that "Morality becomes just one phase of the adjustment of the organism to its conditions of existence. As a good body is one which runs smoothly and efficiently in the maintenance of its vital functions, so a good man is one whose conduct not only maintains his own life on an efficient plane, but conduces to the enhancement of the life of his social group."[1]

In his *Data of Ethics,* Herbert Spencer made the first whole-hearted attempt to derive from the picture of evolution, organic and social, a rule of conduct for men. Arguing that all goodness must be good for something, instrumental to some end, he attempted something far more ambitious than to formulate the end which human societies may aim at: he attributed to evolution itself a definable direction, namely, the increase of life. The transformations within society, from the military to the industrial type of régime,

[1]S. J. Holmes, "Darwinian Ethics and its Practical Applications," *Science,* August 11, 1939, p. 122. Quoted by Professor C. Leake in "Science Implies Freedom," San Francisco, 1940.

are deducible from this general aim, since military activity is mutually destructive. This development is at once moral and inevitable, and the individual human being is urged—not in hortatory terms, but in purely descriptive terms as to what constitutes "highly evolved conduct," reminding one of Confucius's method of conveying ethical exhortation by telling what the Superior or Princely man will do—to fall in with the direction of Nature as shown in evolution.

This system and its current criticisms have been before the public long enough so that every student is uneasily conscious that Spencer has not answered the question why our sympathetic accord with Nature's direction must cease when the curve turns downward and the phase of Dissolution begins.

But even if we were justified in forgetting dissolution and Nature's ultimate indifference to the "amount of life" in the universe, one can hardly refrain from wonder at the confidence with which these suggestions from organic life are brought forward as an adequate code of ethics, or indeed as any code at all.

The harmony of functions within an organism is not a voluntary harmony, at least, it is not so conceived in the customary metaphysical conceptions of the laboratory, which still incline to look for reality in the direction of the physical nexus of events. Society differs from any possible organism in the relative autonomy of the units to whom an ethical code might be addressed. To say that the moral man is one whose activity promotes relations within society like those obtaining in the organism itself is simply to say that men ought to accomplish freely that mutual help which, in the organism, Nature accomplishes unfreely. And this amounts to saying no more than this: that ethical conduct

is conduct in which the antithesis between individual interest and social interest is finally solved. If this were true, it would be no code, but simply a statement of the problem which codes have to meet.

And it assumes that society *ought* to be an organism, which is more than doubtful. For the organic type of harmony is one in which the whole is actually the supreme end, which is precisely what the totalitarian asserts. Such an ideal is more nearly realized in relatively simple societies in which individual self-assertion is less radical. The direction of social evolution is toward the distinctness of individual men and toward an ever changing novelty of pattern in their impacts on one another, within a social frame which does not undertake to include in its own metabolism the whole, or even a major part, of their activities. More than that, in the more highly developed societies, the individual has the opportunity to *go wrong!* He is entrusted with powers which, if he uses them maliciously, may cause serious injury to his neighbors. He is allowed private property, which gives him an opportunity to manifest greed and inhumanity. Should society tighten itself up and deprive him of these possibilities of selfishness? Shall society take away free motion, free use of automobiles, since these liberties make it possible for its members to run amok? Or shall it take the line that free traffic with voluntary self-control in avoiding collisions is still better? The whole moral quality of human existence depends on the circumstance that men *could* go wrong and freely refrain from doing so, not on being cast into a right mould from which they cannot depart. For these reasons, society as a super-organism is a false ideal.

I say this with high regard for the strong case which Professor R. W. Gerard has recently made, in his address at the Fiftieth Anniversary Celebration at Chicago.[1] He

[1]R. W. Gerard, "Higher Levels of Integration," *Science,* March 27, 1942.

unites in his picture the symbol of the organism and the direction of evolution as guides to an ethical code. He points out that

> with evolutionary advance there is progressive emphasis on cooperation of unlike units relative to competition between like ones . . . a step towards differentiation of units and their reintegration into a cooperating whole has always been retained—presumably because it has survival value.

And he carries this principle over into the evolution of social forms:

> As societies develop there is an indubitable trend towards greater cohesion—in the so-called democracies only less than in the avowed totalitarian states,

adding, since the apparent approval of the totalitarian direction lies on the surface of his argument, that

> Reasons for not equating this trend with Naziism or any other existing dictatorship are developed elsewhere.

For the individual, the mental changes which accompany these trends in the structure of his super-orgs are indicated as the enlargement of his social psyche, a growth of altruism, associated with the functioning of his cerebrum, and with a willingness to be subordinated, not suppressed, exchanging old freedoms for new:

> The individuals are imperceptibly conditioned to their social milieu . . . and . . . behave as they do with no feeling of coercion. . . .

I agree that changes of this kind are going on, and that in many respects they are desirable, even necessary changes. I cannot agree that they furnish us a code. They will be permitted to occur—now that we are alive to their presence—only in so far as the developed moral individual assents to them. The developed society is not one which secures its existence first and then the freedom of its members; the developed society risks its own order and welfare to the freely given loyalty of its members and accepts their free

improvisation of new social relationships to a degree that would be fatal to any organic over-structure.

There is no phase of sub-human activity which can serve as a safe guide for the human moral code. We turn therefore to those proposals which take their cue from the differences between man and the rest of Nature, not from the analogies.

3. CODES WHICH PUT MAN IN CONTRAST WITH THE REST OF NATURE

It is well to recall that Thomas Henry Huxley deliberately abandoned the attempt to extract ethics from Nature. If men want gardens, they have a standing quarrel with Nature, which left to herself will pull every park and field back to forest. A modern society, if it is to express *man's* preferences, has to be likewise maintained as an artefact, in which a common plan and ideal replace the rule of impulse. This is what we mean by civilization.

When Nature developed that important tool for survival called the mind, she purchased the possibility of intelligent adaptation to unclassified situations, novel situations, and ultimately produced a creature not limited to a restricted habitat, fit to explore the depths of the sea and the stratosphere itself. But she paid a price for this versatility: that "mind," taken on as a servant of the organism, assumes control of the whole organism; it follows its own ends, recognizes no other ends except its own. Nature was able to set traps here and there, pleasures and pains to guard the most dangerous passes of choice and ensure against speedy death by willfulness of the supposed servant. But even in eating, man eats to please himself, not Nature. And beyond these simple organic necessities all the goods of civilization, and ethics with it, are *his* game alone.

So Bertrand Russell, who would build an ethical scheme in full view of a scientific world-picture, allows Nature to draw the limiting outline of man's hopes, facing fully the prospect of universal death which opens before the race, but within those limits urges us to be free, to assume our due rule in that world of value where we are kings—since there is no one to dictate to us above or below. But as free choosers of our own moral rules, he issues to us an appeal to wisdom—for there are such things as foolish choices. The wise man, he thinks, will choose the non-competitive goods of love and knowledge rather than the competitive goods of wealth and mastery. The ethical law becomes a code of advice for rational choosers, based on an assumption that for all men alike the non-competitive relationship among valuers is itself intrinsically valuable. This assumption he does not support.

And for the ultimate motive which must sustain the discipline and self-restraint involved in all civilized living, Mr. Russell has only the picture of an heroic defiance of fate, a gesture of self-esteem amid the lonely regions of a universe silently, inexorably, unconsciously closing the episode of man's aspirations.

Mr. Russell's ethics is neither scientific nor unscientific. It is factual, in the sense that he takes human valuations as facts, produced in us by Nature. But these facts have the peculiarity of introducing a new polarity into the whole scene, charging all other facts with the invidious qualities of good and evil, better and worse. These qualities, though they express nothing but our own natures, have their own principles of structure, which it is wisdom to recognize—an autonomous structure having nothing to do with Nature. One might suppose that Mr. Russell is picturing man, in the presence of this realm of free rulership, as having

floated well out and beyond the control of physical law. But no: for there stands his opening sentence in this discussion: man is a thing of Nature, not something in contrast to Nature: the laws of his action are the same laws as those which describe the motions of the stars and the atoms. After all, then, this freedom is only a pseudo-freedom: it all lies within the sphere of causal prediction; it alters nothing in the procession of physical detail. And this final appeal to the attitude of defiance and despair is but histrionic: for it lies not within our choice but in the control of iron necessity whether we pass out thus, or resentful and afraid, or simply weary of a hopeless fight, whose glorious achievements by the way there are none to record, none to celebrate, none to remember.

Just this effort of Russell's to decorate with solemnity the Dead End of human striving, which he takes as scientifically fixed, shows, however, one important link between fact and value. If that *is* the end, it makes a difference in *all* values.

What difference does it make?

Here I would like to bring forward a more serious witness than Mr. Russell. In his recent Gifford Lectures, *Man on his Nature,* Sir Charles Sherrington, the noted physiologist, represents in his last chapter that "Conflict with Nature" in which our moral problem is born. Man alone surveys as a whole the process out of which he comes and is able to estimate its inner suffering and cruelty:

> Standing on his planet he, its own product, harbours rebellion against the process which has enthroned him.[1]

At this moment his "altruism is in bud." But there remains in him the "old primordial 'urge-to-live' " which continues

[1]Sir Charles Sherrington, *Man on his Nature* (New York: The Macmillan Co.; Cambridge, Eng.: The University Press, 1941), p. 388.

that same course of conflict and self-assertion, and "life without 'zest-to-live' will assuredly perish." Hence there begins within our own nature a "great antinomy," in which the direction of altruism alone promises a degree of respite from the agony which has built the present living world. As to the ultimate outlook, Sir Charles seems to find the race confronted with the same probable Dead End foreseen by Russell. The demands of truth require us not to evade in thought the ultimate bleakness of the human position. There is no appeal beyond man for guidance or for help, since man is the summit of the intelligence of the universe, but this fact itself is, in Sir Charles' view, tantamount to *responsibility*. Since there is no God beyond us, we must make common cause, and share the task of reaching goodness and beauty with each other. Let me quote his words:

> . . . it is a situation which transforms the human spirit's task, almost beyond recognition, to one of loftier responsibility. It elevates that spirit to the position of protagonist of a virility and dignity which otherwise the human figure could not possess. It raises the lowliest human being conjointly with the highest, Prometheus-like, to a rank of obligation and pathos which neither Moses in his law-giving nor Job in all his suffering could present. We have, because human, an inalienable prerogative of responsibility which we cannot devolve, no, not as once was thought, even upon the stars. We can share it only with each other.[1]

Thus to extract an "ought" from a factual situation is not for Sir Charles a scientific result: it belongs to what he calls "natural religion." But quite clearly, he finds here a passage from fact to value; and more than this, believes that the value thus found will or should evoke the same ethical response in all men.

4. WHAT ARE THESE ETHICISTS AFTER?

I am not sure that Sir Charles means to present us with one of the Dead-End pictures of the world. Perhaps he

[1] *Ibid.*, p. 404.

means to leave the finale open. In either event he, like Russell, tries to induce us to forget it, as irrelevant to the interim in which human lives should be happier rather than more miserable, and lightened by beauty rather than sordid. From this there will be no dissent.

The only trouble is that it does make a difference whether in the total, something is achieved, and to this both Russell and Sherrington would seem bound to answer no. There will be a time, after the vanishing of human life, when the universe will be as if the human history had never taken place.

This seems to Sherrington not to alter the quality of our satisfaction in such enjoyment as we can have. For, as he says,

> Even should mind in the cataclysm of Nature be doomed to disappear and man's mind with it, man will have had his compensation: to have glimpsed a coherent world and himself as item in it. To have heard for a moment a harmony wherein he is a note.[1]

One cannot refrain from questioning whether the world which brings forth man's conscious struggle only to pull aside the veil for an instant and then quench both struggle and vision could appear to him as either "a coherent world" or a "harmony." And if it appeared even as a momentary enlightenment qualified with an element of cruel mockery, would this result indeed deserve the name of "compensation"?

It is here that Nietzsche comes nearer to meeting the need for an ethical motive. For him, there is something to be accomplished—the overman—the next order of being beyond man. And for the sake of this result, Nietzsche, like an earlier and greater prophet, promised his followers not pleasure but suffering, not ease but severe discipline, not

[1] *Ibid.*, p. 401.

peace but a sword. "Geist," he said, "Spirit is the life which cuts into its own life."

Now Nietzsche was not a natural scientist, yet he professed to take his clue from evolution. We might have put him into the first group—those whose ethics is a following of Nature, only, what Nietzsche saw in Nature as worth following was certainly not what Spencer saw, or Conklin, or Gerard: it had nothing to say about cooperation and harmony. He read into Nature an effort to get beyond itself, to make every form that had hitherto existed raw material for a better form to come.

So Nietzsche combines both types, those who follow Nature and those who set man apart; because for him man is just the line of battle through which Nature is making her way toward something which no past mode of life could suggest, and the problems which to us seem to promise nothing but the Dead End may for that higher being prove to have an outlet beyond.

It is evident that Nietzsche, though he declares that God is dead—the God of the skies and of tender Providence—is injecting a living trend into the course of cosmic history. It would be idle to describe it as a "purpose," this upward drive of his—thwarted in the end by his spectre of the Eternal Recurrence. Yet we may say that Nietzsche's ethic showed by its leap toward a prefigured accomplishment, that of the Superman, one essential element of a code, any code which can win the support of a human morale. And it is something, too, that he does not feel the need to repudiate *all* the harshness of Nature, nor to rest everything on an advance of sympathy: creatorship is, for him, the answer to both sympathy and struggle, containing something of both—involving a transformed sympathy and forgiveness:

What thou hast done to me, I forgive;
But what thou hast done to thyself, how can I forgive that?
.....
The will of all great love is—the beloved to create.

It is the destiny of such wild genius as that of Nietzsche to tell no well-rounded truth, but to strike out here and there forgotten elements of rounded truth.

All in all, we gain from these codes that would follow Nature and from those that would cast off from Nature an impression that Nature says nothing which a scientifically dispassionate ear can take as a reliable ethical cue. There is something of prejudice in the listener which selects from a conflicting variety of suggestions among the facts those which it prefers to hear. But I am not sure that this process is either purely arbitrary or purely subjective, if what one hears is a *resonance*. For science alone, Nature has no intention and no ethical admonition: for a more intuitive perception, the total fact of Nature does seem to convey a dim "ought"—a summons to man to be himself, to detach himself from retrospective organic analogies, and equally to discount the laming prospect of the Dead End. It is as though Nature were saying, "If you could know me as I am, you would find in me something not alone to wonder at, but something also to be loyal to." This is not much, but it leaves hope of a passage from fact to value. We shall now take up the enquiry from the other end.

5. CAN "OUGHT" BE DEFINED?

None of the codes we have examined can defend themselves against skeptical analysis, and yet I think we should be dupes of our own skepticism if we did not recognize in all these efforts a sound instinct to join the "ought" in some way to what is. We may begin a tunnel from the other side of the hill, by analyzing the meaning of the term "ought,"

in order to see whether the idea of "ought" will show some relation to what is.

Like the term "value," the term "ought" may well put up a claim to be indefinable. We have indeed a genus for it, the genus "value": but if we then attempt to say what differentiates it from other values, we can only light upon the "ethical" or "moral," which in turn relates to what we ought to do, and we complete the latent circle.

This indefinable character appears in our inability to explain an "ought" to anybody—man, child, or dog. A dog may be taught that he is not to put his paws on the table; and the "must not" in this case has first the purely pragmatic meaning that he will be punished if he does. If he is a dog of character he seems to get somewhat beyond that point: it is not that his act is punished, but that it is disapproved, which is quite different. And he may even reach the point of seeing that it is not alone factually disapproved —for unknown reasons—but *justly disapproved,* which is surely a great stride into the center of the moral mystery! If he ever arrives at a dim feeling that "this sort of thing is not done," that well-conducted dogs do not do it, he comes close to the edge of the moral "ought"! Whether any dog reaches this point, we shall never know.

The child follows the same course, but he arrives: he sees eventually *why* certain types of behavior are approved or disapproved; then he understands and can use the word "ought." But it is never explained to him: he has to recreate its meaning from his own inner resources.

The difficulty in defining ultimate terms of this sort is that we must either define them in terms of what they are or in terms of what they are not. To define them in terms of what they are is circular. To define them in terms of what they are not is false. For example, if we try to define

the mind, we can define it in terms of mental states, which is circular, or in terms of behavior, which is false. If we insist on defining such terms we seem to be put to a choice between being inane or false. Which do you prefer? Most of the interesting novelties in recent philosophy and logic are the result of preferring the false definition to the fruitless one. The mind is certainly not behavior, but it is in the context of behavior, so that with an initial deed of violence the definer does succeed in finding something useful *about* the mind. Likewise all pragmatic, instrumental, and operational definitions are false: a concept does certainly not mean its consequences, nor what we do with it—otherwise the word "it" has no referent. But such definitions need only a slight turn to become true and fruitful as the circular definitions never can be, and we can avoid the element of falsity by being clear that we are not defining by essence, but by context. Accordingly, we shall not undertake to say what "ought" *is,* but point out certain situations in which its use is appropriate.

One common situation of this sort is that of pointing out to someone a good thing which "he ought not to miss." Thus:

"Here is a good play—you ought to see it."

"Jones is a competent man—you ought to consider him for your job."

"There is a fine highway, shorter and better—you ought to go that way."

In this use of the word there is a close agreement between prudence and morality, though still a difference. In terms of ordinary prudence, Smith *wants* to take the shorter and better highway. The word "ought" indicates that there is some hesitation, or habit, or lethargy to be overcome; and a man owes it to his total conception of a good life to make

the effort to include in it the better rather than the easier course:

"Don't be stodgy: you ought to get up and see the sunrise."

"Ought" acquires a more distinctly ethical meaning when it contains some reference to what is the better course for others than oneself, as in this context:

"Here is a chap who needs your advice; you ought to find some time for him."

In both sets of cases there is a choice to be made between courses having unequal value. (It is assumed that this inequality is recognized both by the person who says "I ought" and by the one who says "you ought": unless such value-contrasts were in the field of common knowledge, any one would hesitate to say "you ought" to anybody else, and a large segment of human intercourse would fall to the ground!) The word "ought" refers to a demand—an intangible pressure—to act for the better rather than for the good.

Almost we are tempted to define the "ought" as a strain-function in a field of values—a force "constraining" us toward the better. But this would imply that we are being automatically wafted along toward the "right" choice; whereas it is part of the meaning of "ought" that the moving is all our own, and that we may very easily neglect the better for the good.

We must consider the "ought" rather as an indication than as a force, an indication weighted with advice or with admonition if it comes from a social environment, but otherwise weighted only with one's own concern for doing the better job, a sort of generalized love of workmanship. We might then represent the general situation in which the "ought" appears as follows:

OUGHT — The better
OUGHT — The good

The specifically ethical form of the "ought" might be represented:

OUGHT — The better, as affecting another within my field of free action.
OUGHT — The good, as affecting another (or the neutrality of inaction).

But there is a third use of the term. We have already mentioned the easy assumption we make that anyone can tell anyone else what he ought to do. The surprising thing is, not that this assumption fails from time to time, but that it works so well: family life would be impossible without it. But what happens when it fails? Suppose I say to you: "Good play—you ought to see it," and you rejoin "I don't care for plays." I am abruptly reminded that my confident "ought" was assuming that a good play had a settled objective value. When you remind me that this value is relative to the valuer, and that if you don't care for plays there is nothing I can do about it, I am baffled for a moment; but I may come back with another "ought"—"You ought to care for good plays!" Here one sets up a value as independent of my factual valuation, and addresses an "ought" not to my activities but to my valuations themselves!

The most disturbing and deep-striking "ought" in the world is that I ought to value things at their true worth. This involves that apparently hopeless demand, that I should care for some things that I do not care for, and vice versa: as—to return to our fundamental example—that I should love my neighbor when in fact I do not love him; nevertheless it is a demand which we are constantly acknowledging and attempting to meet. For it is always a source of shame—though we brave it out—if we have to admit that

we do not appreciate a certain type of quality in the world, of which a good play may be taken as an example. Nothing is so disturbing in dealing with children as the suspicion that little Johnny cannot perceive the moral turpitude of a lie! —nothing so everlasting as the hope that someday he will change his valuations. He usually does. And thus he illustrates the reality of a value independent of factual valuations, which may hold an "ought" over them! "You ought to find lying hateful."

Even so, this "ought" also is valid for me only because I can recognize it and attain it. Music ought to be enjoyed; but the deaf person has no moral duty to become an enjoyer of music. In every form, the "ought" must have its rootage in the actual, including those possibilities of the human self which are actual possibilities.

With this understanding, we may now define what we can mean by an "absolute" ought. It is based precisely on the fact that we discover relativity in ourselves, and that we do not wholly approve of it. The absolute ought applies to our desire, and our capacity, to alter our desires in such a way as to escape from the relativity of purely factual likes and dislikes. It means that every "ought" based on *prima facie* judgments of good and better alternatives is subject to revision, so far as those judgments are relative. Every actual preference is subject to criticism. Hence any attempt to find moral or other norms of judgment by statistical methods is at best an approximation; at worst, a house built on sand. It ignores the most important of all facts in the premisses, the desire of every mind to get beyond its own shifty ethical impressions based on the wishes one may find in oneself on that morning when the questionnaire comes around.

This absolute ought, we may represent as follows:

To summarize our discussion so far:

When the existence of something better in the world depends on efforts which I can make (and which I alone can make), I "ought" to make those efforts.[1] And this formula holds good when the something better is a better state of my own desires.

The facts within which we have found the "ought" operating are not neutral facts: they are facts already loaded with quality and comparable as "better" and "less good." To this extent they depart from scientifically usable data: there are no physical measurements on the better-worse scale. They are none the less facts, though they involve a factor of quality. This is the point which Dr. Arnold Brecht makes in his paper on "The Myth of 'Is' and 'Ought' "[2]—far and away the best analysis of these concepts in their legal bearing that I have yet found.

There is, however, a simpler situation, purely factual, in which the "ought" comes into operation, that is, when any self finds among his objects another self. Immediately there is an obligation of some sort: I cannot treat that object as I treat a piece of furniture—his presence constitutes an "ought." I propose to sell my farm; but I remember that my farmer depends on me for his course of life—immediately I am less free. If you ask what it is that I ought to do about this other person, there is no specific answer except in terms that suggest truth-telling: I must treat him as what he is. If he is a sensitive thing I cannot treat him as if he were a log. If he has reason and can manage himself, I must deal with him by conversation, not by manhandling.

[1]This might be called a functional definition, though of a new pattern. It means looking for the function of a term within a given situation, not for its "effects" outside of its situation. It means finding the constant or invariant element in a variety of such situations, actual not verbal.

[2]*Harvard Law Review*, Vol. 54, 1941, pp. 811–831.

It is much like another obligation which seems to spring directly from fact, that of making a true report. *The facts —all facts—put a spell on me:* I must remember them as they were, and I must speak of them as they were. There is an appeal to veracity in one's most literal relation to the most literal of facts, which is inseparable from one's self-consciousness and from one's personal identity. Falsify your story and you falsify yourself.

Put it this way: I am under a very primitive obligation to treat my world of experience as a world of real objects, not a world of private dreams; and because it is such, I cannot have it just as I would like to imagine it. I must respect it, just as it offers itself to me. Here we come very close to a foundation stone of the scientist's own creed. If we are right, we need nothing but ourself and an object to have an "ought."

But one may still ask, why am I under any *obligation* to treat an experience as a sign of an *object?* Why am I under a duty to *think* instead of letting impression follow impression, to go through all the labor of building a consistent theory of this chaotic stream of materials in consciousness? The answer lies in putting our last two observations together. To tell myself the truth about things, and to recognize among these things some that are other persons, are bound up together. If I live a life of impressions I have neither objects nor companions. And a life of impressions would indeed be devoid of duty: there would be no "ought" in a pure stream of consciousness. But if there are companions to be had, I ought to have them! And if I have them, my world must become a common world.

We come thus upon an interesting result: that the tug of "ought" never comes solely from the "something better" as an abstract possible achievement; it comes from an in-

terest on the part of *some other mind than our own* in what we do or desire. If any man could be truly and absolutely solitary, there would be for him no "ought": his better and worse would remain, but they would be matters of prudence, not of duty. If the last man in the world, just before its final destruction, were a chemist, and if that chemist were at work on an experiment which would possibly throw open to him the last secret of atomic structure, I imagine he would go ahead and finish the experiment. He would do it not as a duty, but for the sheer exultation of knowledge. But I am ready to wager, even if he were a British chemist, that he would not dress for dinner—not unless he felt that there were after all some other mind in the universe, as it were looking on!

That suspicion of residual mentality is hard to dispel. Around all our doings there hangs this fringe-conception: the world expects something of us, the world somehow expects every man to do his duty. This sense of an undefined outer concern in what we decide is very primitive, must, I think, be a part of the infantile equipment of awareness; for after all it is the infant and not we who has to build up its world of impressions into a shared world, to regard its space as a space in common with the rest of us, and the events which occur to it as phases of events which belong to the history of a community of persons. It is but a farther stage of the same awareness when human beings feel the call of the job as having a claim on them apart from their immediate inclination, and gives them a pride in workmanship, and an impulse to do in the way of perfection what no man could require of them. It belongs to this same awareness to conceive that truth has something inherently important about it; not only is truth for one the truth for everybody, but what is true remains true—so far as it is true—forever, whether we are there to know it or not.

I think that the "ought" can be found in the very simplest factual situation, for there is none such that does not make some appeal to our will. But I think its most radical and satisfactory definition is found in the universal human situation, one that never comes nor goes because it is always there, the self on one side, the world on the other, and on both sides an attitude of *expectancy!*

That element of expectancy, to which "I ought" is a response, would be hard to demonstrate. It would be still harder to refute, if it happened to be true. And the scientist is one of the men who acts as if it were true. He acts as if there were an "ought" in the call to know, and as if the "ought" were there first!

6. IS FREEDOM AMONG THE FACTS?

Our analysis of the factual circumstances belonging to an "ought" appears to include the fact of freedom of choice. The whole point of an ethical code or injunction is lost unless it is possible for the hearer to heed or not to heed. There is no exception to this principle when it is a scientist who uses the "ought": he also assumes that his hearer is free. Sometimes he is bothered by the contrast between this assumption and the working-hypothesis of his laboratory that all phenomena are determined. As a rule, however, he is no more bothered than was Spinoza, whose great book on Ethics, teaching the strictest rule of necessity in all things, ends with a magnificent exhortation under the head of "Human Freedom," to achieve those excellent things which are "as difficult as they are rare."

Herbert Spencer is another example of the same lofty inconsistency, if it is such. In fact there are so many thinkers who are both determinists and also moralists that one begins to suspect something wrong in the insistence on freedom. Or is there something wrong in the insistence on determin-

ism—except as a principle of method? The proposition that everything happens according to an absolutely fixed mathematical relationship to prior events can never be proved. That is one reason we get so hot about it: it is a proposition that needs protection.

In my view the question is an important one, and despite its antiquity it is capable of settlement. Its solution will remove one of the chief impediments in the relations between science and the world of values. For the present let me simply indicate how definitely freedom is required if the word "ought" is to have any sense. And let me come at it by way of another biography—which up to a certain point was a scientific one—my own.

In my younger days I had the full joy of an enthusiastic discipleship; I was fully convinced by Herbert Spencer's system of philosophy. Interest in Spencer's world-view chimed in very well with my active tastes which were turning toward engineering. It was in pursuit of these interests that I went to college at Ames, Iowa, working at mathematics, and in the laboratories of physics and chemistry.

Perhaps I might have been called in these days a budding scientist: it was certainly not a bud that ever blossomed, but a comradely spirit is left for the labors of the workshop, and a kindly feeling for the smells of chemical and biological laboratories.

During all this time, happy in its positive activities, there was an undercurrent of desolation. I remained a devout adherent of Spencer's cosmological views. That belief was certainly no result of wishful thinking: I should have liked not to believe it. But it was convincing; its power lay in the continuity of interpretation, and the unifying of vast ranges of phenomena throughout the universe. The items which most required my reluctant assent were these:

(a) The periphery of the universe dropped off. There could be no other world as a supplement to this one. The story of Nature was the whole story of the universe.

(b) Man is an animal, with some notable points of superiority in the scale of evolution, as measured by integration and differentiation. But he dies as the animal dies, and the race of man will be involved in dissolution, with the rest of life in this region of the universe.

(c) There is no genuine freedom.

I did not at that time draw the consequence that nothing has any meaning at all—since if the whole has no meaning, the parts cannot preserve significance—I was ready to accept the evolutionary substitute, the direction of cosmic change (or one direction of the rhythm of change) as indication of a certain value-scale embedded in Nature. Spencer had succeeded in investing the universe with one magnificent certitude: that there is an impenetrable mystery at the heart of things, an Unknowable. And while the presence of The Unknowable in no way altered the grim fate of man, it left open the imaginary possibility that there could be an Unknowable Meaning in the whole affair.

During the course of my studies in Ames, various things occurred to jar that picture. One was an introduction to a new book on psychology. This was in 1895. The author was William James. I had never heard of him. The librarian told me the book was well spoken of.

It is hard to analyze the nature of the jar which my fascinated reading of James administered to the dominion of Herbert Spencer. I do not remember any particular thing I learned from that reading; but it brought me a great sense of relief. It was evident that James had a scientific conscience: he was looking at the mind, just as Spencer was, as a thing of Nature. But he was telling more truth about

the mind than Spencer did: he was devoid of the vanity of supposing himself fully on top of his object, having it finally explained. If the mind was too much for him at any point, he admitted it. The scientific problem of psychology gained some of the joy of good sportsmanship—the fish had a chance. And James seemed to enjoy the twofold rôle of the psychologist in that sport, that of being both the angler and the fish at the same time!

The experience was not one of being emancipated from science; to go back on science was a logical impossibility. But I did feel that the weight of an unnecessary negation had been lifted. Spencer had negated the right to enquire beyond what science in its positive aspect could show; science and knowledge were coextensive: the rest was unknowable. This is a claim which science does not make. It appears to support it by the general argument of displacement; where the scientific explanation is either given or to be hoped for, no other can be allowed. The principle of parsimony acted as a restraint upon speculative enquiry. James showed me the illegitimacy of that clamp, and especially as it related to one very crucial matter, the problem of freedom.

The merits of that problem will concern us in the next lecture. For the present, I raise only this question *ad hominem: Why is determinism depressing?*

There are some who have reached the point of denying that it is depressing. I think I see what they mean. They mean that it is not depressing to be a cog in a great machine. This is particularly the case if the great machine is in some sense a decent or respectable machine, not a mere heartless monster. Spinoza found it elevating to be lifted into the atmosphere of eternity by contemplating the sublime necessities of a universe in which the most perfect necessarily exists. So have many mystics felt it elevating to be admitted

to participation, even to absorption and obliteration, in the life of the infinite and one. So has many a great man found it elevating to be a helpless instrument of Destiny.

It is not depressing to be a cog; it is not depressing to be insignificant. What is depressing is to be *only* a cog, an atom without spontaneity of its own, without any contribution hailing from oneself. So I leave this question, Why is determinism depressing?

III

VALUE AND FREEDOM IN MAN AND UNIVERSE

I LEFT with you the question, Why is belief in determinism depressing? The answer which many are disposed to give is that it is not! The physiologist or psychologist or sociologist who is getting on with his efforts to find causal connections in human behavior is not alone not depressed; he has the excitement and pleasure which attend all scientific advance. It is only the realization of what a completed determinism means that is depressing—not to the observer, but to the observed, the human being as a person acting in his own right.

The primary reason for his trouble is his discovery that, if he is all-caused, he, in common with other men, *never really does anything.* Everything is done ultimately by the physical universe, (which has the disadvantage of not knowing what it does). We may be said to do things precisely as any machine does things. We are transformers of energy, and things happen differently than they would if we were not in the world. Things happen differently because locomotives are in the world, and surely the locomotive pulls the train. But we make the locomotives, so it is we who pull the train; and Nature makes us, so it is Nature which makes the locomotives and pulls the train. Indirectly Nature does all that is done in this universe: it is all the necessary consequence of the most ancient constellations of fact operating under the laws of fact. Hence we are under an illusion—or let us say a half-illusion: we think we do things,

and so we do, because the ancient stream of energy flows through our switch-box; but we also fancy that we do things as originators, thinking our own thoughts, using an initiative which is our own and no other's—and there on this theory we are wrong, for Nature produces the thoughts also.

Looking at the process of history as a whole, we have to take the sum of all such private reflections and say that the history of tomorrow is already written. We are not admitted to the secret, but what we shall do is settled in the shaping of all earlier facts. Our several careers are already marked out and in principle knowable. The outcome of the war is determined, and of all that will come after the war. We shall continue to plan, strive, and suffer, for these efforts are part of the picture of what shall come. It is perhaps this that most appalls us, that we cannot in any way change the amount of caring and striving we are predestined to perform, since our loving and hating, fearing and fighting, are already printed on the everlasting film which inexorably unrolls itself, not knowing what it does.

There are those who would draw the sting of this puppet-picture of human life by saying that, if all things are determined, nothing is changed. All inner relations remain as they are (just as they do when we accept the assumption that we see everything upside down) : our feelings of interest, effort, triumph, yes, the sense of free-origination itself, all fall into their natural sequence and make precisely the same sense that they now seem to make. It is doubtless this that Spinoza had in mind when he wrote about the causes which bring about our volitions:

> There is not in the mind a will absolute and free; but the mind is so conditioned as to be caused to will this or that, by some cause which is determined by another cause, and this by another and so to infinity.[1] . . .

[1] *Ethica,* ii, prop. 48, as quoted by Sir Charles Sherrington in *Man on his Nature, loc. cit.,* p. 199.

> Men think themselves free, because they are conscious of their volitions and of their desires and are oblivious of the causes which dispose them to desire and to will.[1]

And it may be the sense of the remark which Sir Charles Sherrington appends to this, his quotation from Spinoza:

> . . . from the human standpoint, the important thing is less that man's will should be free than that man should think that it is free. That can indeed serve to activate and sustain his zest-for-life.[2]

This comment, however, is an admission that the belief in freedom is necessary to activate and sustain the zest-for-life; and while it is quite in order before one has seen the hoax, it is hard to maintain it afterward, or to see how it can reasonably be maintained.

The deepest impulse in man is the will to be effective, to amount to something, to be a cause. Under the view of determinism this effectiveness remains, not as mine but as of something which passes across my being. We are asked to be satisfied with this passage. The fact that our power is loaned, and that its deeds are mapped out for it, does not cancel the fact that it is power, nor that it is a cause. Every cause is an effect, but none the less has its day as a cause. The energies of the world are older than the sun and have run through all time, but now they run through us, and we are the makers of the next stage of the world's life. This is not alone plausible; it is quite true. But it fails to reach the heart of the trouble. The power that concerns me is not the power to lift a weight, nor to change my neighbor's vote, but the power to decide, to invent something new, to devise a possibility which apart from my thought the universe did not contain, and to bring that possibility into existence.

It is because determinism eliminates this particular, specific, and essentially human form of power that it is a subtly

[1] *Ibid.*, Prop. 48, appendix.
[2] *Loc. cit.*, p. 199.

depressing doctrine. Everyone who first grasps its implication feels as if cold steel had passed through him, even when he fails to understand the source of this touch of death. Is science, then, irrevocably committed to determinism?

I. THE POSTULATES OF BIOLOGY

Biology itself is caught between two postulates which lead to opposite answers in regard to the rôle of the mind. One is that no organ is evolved which does not have some biological utility; the other, that the whole chain of physical phenomena has other physical phenomena as antecedents and nothing but physical phenomena. The former postulate would imply that, since the mind has evidently evolved in the animal series, it has some biological utility. The latter postulate would imply that since behavior is physical its antecedents must be all physical and not mental. The physiologist has never to look for a mental link in the series of events between stimulus and response; whence, the mental phenomena have no utility at all—they merely accompany the brain-and-nerve phenomena which do the work. Biologists like other people fall into the verbal expressions which imply that human and animal wills affect events. They speak of impulses, desires, satisfactions, habits, but they are aware of the peril in this concession to usage and have even devised mind-proof terminologies, as did Beer, Bethe, and Uexkuell, in which no psychological suggestion should be found. In the struggle between these opposing postulates the mechanical ideal tends to win out; but there remains an uneasiness over the question, Why—if the mind has no difference to make in the behavior of organisms—did it ever make its appearance and then develop its insecure cranny to such marvelous dimensions?

Herbert Spencer's psychology appears to reconcile these

two postulates. He rejects any freedom of the will which would make a difference in the causal march of events through the organic body. At the same time, we have an experience of being free which is not illusory. For our wishes and desires are, so far as our experience goes, the instruments by which Nature wins her way with us. His statement has a remarkable conciseness and clarity; in substance it is this:

> If you mean by freedom doing as we please then we are all free. For we always do as we please. The point is, that we cannot do anything else. And we cannot please as we please.[1]

By determining what pleases us, Nature determines what we do. The course of our mental life is then wholly compatible with a perfect causal mesh in the field of the physiology of the nervous system.

Now James was never as beautifully clear as this, nor as consistent. For laboratory purposes he was willing to insist as firmly as H. S. Jennings on experimental determinism. But when he tries to answer the question, How do we know when an organism is conscious? he assumes that the mind makes a difference. A creature is conscious, he says, if its behavior shows "a pursuit of ends, with a choice of means." We see a horse reaching for a bunch of hay on the floor just beyond the reach of his nose: he is pursuing an end! If he fails to get it by one posture, he tries another, perhaps paws at it with his foreleg, perhaps whinnies a little as if to get a man to work on the problem: he chooses means. Ergo, we say, the horse is conscious—has a mind! All this is non-

[1]This passage, from *Principles of Psychology,* Vol. II, is presumably later than the sixth edition of *First Principles,* in which he changed his statement of the relation of mind and body. In the first edition he treated the mind as a form of energy, and regarded it as on the level with heat, light, etc. (see his chapter on "The Correlation and Transformation of Forces"). But he later saw the impossibility of measuring consciousness in C.G.S. units, and so attempted a view in later editions which approached the "two-aspect theory," though it never reached a form satisfactory to himself.

sense from the point of view of the laboratory. No one can identify an "end" in strictly scientific description; and hence not a means. James's language is highly objectionable; but it is there. Further, he believes there is such a thing as "will," and as a psychologist he is obliged to say what it is.

Savagely condensed, James's answer amounts to this: Whatever the organism has done by way of random or reflex movements, we can recall the motor-experience of. And whatever motor-experience we think of intently, we tend to carry out. If you think of yourself grinning, you grin. Will consists in giving one such image-of-action our undivided attention, with perhaps an extra flick of consent or signal-giving called a "fiat." In any case, will is the name for a state of mind which stands as the immediate predecessor of an action, and appears to release the causal energies of the "voluntary" muscles.

Now the puzzle of all this, from the purely physiological point of view, is "Why any state of consciousness at all should precede a movement"[1]—and James confesses he does not know the answer. What are the real and determinative antecedents of that physical phenomenon we call a voluntary act? Does our "trying hard" to act, or to think of action, or to think of anything—does this inner exertion of ours which we call "willing" accomplish anything in the world of facts? James thinks that on psychological grounds there is no solution, makes a few vague suggestions about "empirical evidence," admits that he finds it hard to believe that thinking is a wholly useless activity,[2] and lets the matter go over into a higher court.

We all know what James's higher court decided. It de-

[1]William James, *Principles of Psychology* (New York: Henry Holt, 1890), Vol. II, p. 495.

[2]*Ibid.*, p. 571.

cided on pragmatic grounds that the will must be an effective agent in the actual physical changes we call behavior. James rejects those easy solutions of the old puzzle which say that from one point of view an act is free and from another the same act is determined: if you are *describing* behavior in terms of cause and effect, you find that it is all so describable; if you are *evaluating* it in terms of its goals, you find that it is all purposed; hence there is no real issue. Kant solved the matter that way: freedom was simply the "intelligible" version of what was on the physical plane necessitated; so Fechner, so Paulsen, so Royce—who contrived the expressions, "the world of description" and "the world of appreciation" to express the difference of the angle of regard. According to these proponents of the "identity theory," if a murderer decides to pull the trigger and his victim falls, all the finger-action on the trigger, since it belongs to the measurable world of cause and effect, had to be from all eternity just what it was: the murderer never had the choice, " to pull or not to pull"; the only element of freedom was in the play of emotive color around the general concepts of law and life that may have taken place in his reflective self during this event. To James this seemed a travesty on the whole meaning of freedom. And here, I confess, I applaud James's flat-footed common sense. Freedom, if it means anything, means the reality of concrete alternatives; and it can only exist in a world in which there is an open issue between "to pull or not to pull," an issue that is not closed until the willing agent closes it.

Where James's answer is unsatisfactory is in the nature of his higher court—the pragmatic method. It was the defect of the pragmatic method that James could acquit himself of trying to give a genuine solution. To point out that we have a vital stake in the matter was important, but to suppose

that the importance could settle the matter was a fallacy. No matter how depressing determinism may be, no matter how important it is that men consider themselves responsible in the concrete for what they do, these concerns do not constitute a settlement—they are nothing more than grounds for hazarding an hypothesis, if we have no time to think it out.

The real relation is reversed by pragmatism. We do not judge determinism false because it is depressing; we are depressed by it because at bottom we know it isn't true! The whole picture it gives of the world and man's place in it is so grotesque, so passivized, so tied-up, so horribly untuning of all the springs of conscious life, so closed-in toward the future, so stingy of possibility, so empty of novelty, so vacuous of all motive for living, that no live man can draw a full breath in its atmosphere without feeling poisoned.

It is not true. But if not, where is the fallacy?

To that neither James nor Royce have given an answer, and an answer is demanded, whether by the scientist or the man in the street. Fortunately, it is science itself which now affords the means for the answer.

2. PSYCHOLOGICAL LAWS VALID ONLY BY CONSENT

The first point to observe is that the scientist who carries his experimental determinism over into the explanation of human behavior is forgetting *himself*. In his examination of physical things, to forget himself is his duty. But when he is making a psychological observation, he is the observer, and he is also the being observed; this twofold rôle of the observing psychologist cannot be forgotten without distorting the results. And once you recall that the observer is in some respect substantially different from the observed self, the deterministic apple-cart is definitely overturned!

For it is only the observed self that can be considered a caused self.

Suppose, for example, we were in the position of a character in Ibsen's "Ghosts," reflecting on his own heredity, and arguing as follows:

> Whatever a man does is the joint product of all the causes, of heredity and environment, that play upon him. I recognize the working in me of ancestral dispositions. My father was a tippler; now as I settle down for an evening with the bottle, I can perceive the growing power of habit upon me; very soon I shall be a drunkard also. I see my future self being caused: there is nothing I can do to prevent it.

One feels a certain insincerity in the reflection. The man who recognizes the causes may be making an accurate observation, but what he is failing to observe is that his very observation is putting him in a position of detachment from the caused self. Either he likes what he sees happening or he does not like it; if he does not like it, he is in a position to change it, just on account of the objectivity involved in the position of observer. (This position is quite different from that of his father, for it has the paternal career in its entirety as one of its data. As Bergson has observed, there are in conscious experience no repetitions, and therefore no precise footholds for laws of recurrence such as all causal formulations are. But our point is a different one. The absence of exact repetition is also true of physical situations and does not invalidate the application of causal formulae, which are always dealing with abstractions from the concrete total event.) Our point is that the emotional bias, inseparable from the function of observing a causal series terminating in oneself, is a factor instantly *suspending the continuity of the causal process* and subjecting it to a judgment of approval or disapproval. If the observer omits to note his own presence in the total factual situation, he omits, not a detail, but the crucial factor of its denouement.

This situation has already received attention from the logicians, both of ancient and recent times. It is of the essence of the famous paradox of Epimenides the Cretan, who announces that "All Cretans are liars." If his statement is true, he is himself a liar; and then if his statement is in character it is false. If, however, the statement is false, he may be telling the truth, in which case he is a liar. Now this merry bit of self-tripping logomachy is one which Principia Mathematica first attempted to solve by the Theory of Types, which set up a sort of police regulation whereby no proposition is allowed to refer to itself. Under this rule the proposition that all Cretans are liars may refer to all other statements made by Cretans, remaining itself immune from the damaging comment. This solution is unsatisfactory, however, because there are so many propositions which obviously must be allowed to refer to themselves, such as this, that "every proposition either affirms or denies something." The solution must lie in recognizing the intention of the speaker—whether he does or does not intend to include his own statement in the sweep of his statement about statements.

This factor of intention may be illustrated in a concrete illustration which I owe to Professor Wertheimer. Some years ago attendants at the Psychopathic Hospital in Berlin were wakened by a persistent knocking shortly after midnight. A man at the door demanded admission as a patient. "*Ich bin verrückt,*" he said: "I am crazy." Regulations of the hospital required that no one be admitted as a patient except on the certification of two physicians, but as no physicians were available at that hour, and as the prospective patient showed every sign of consent to his own admission, and as it seemed inhumane to turn him away, it was decided in the emergency to accept him for examination. The ex-

amination showed that he was in fact insane, and he was continued for treatment. Relatives of this man, however, complained of the irregular procedure, and brought suit. Their case rested on the circumstance that if the patient had rightly diagnosed his own insanity, he cannot have been insane. If he was right, he was wrong.

The situation is logically perplexing only so long as we fail to distinguish the judging self from the self judged. If we maintain their complete identity, we make any self-criticism logically impossible, for if a man sees something evil in himself, he must be either good or evil in making the judgment. If his self-criticism is true, he is a good judge in judging himself to be evil. If he must be an unjust judge when he judges himself to be unjust, he is effectively estopped from ever admitting his own injustice. But since just self-criticism must be and is possible, the judging self must be able to extricate itself from the condemnation which it issues upon itself. That is to say, the self which is made the target of criticism is in that act of judgment consciously set off from the self which is criticizing. A man may with clear sight perceive his sight to be habitually unclear.

From this point of view, we may say that any man who makes about himself an unfavorable generalization, such as this, "I am lazy," "I am too irritable to get on well with anybody," "I am one of these introverts, and can never brace up to the demands of the hard facts of life," anyone who makes such a statement with intentional disapproval may perfectly well be correct in his judgment with regard to the self he has in mind. If, however, he intends this judgment to apply to his whole self, including the self that judges, *he is always lying,* because the self which takes that criticized self into an objectified and disapproved regard at that moment, is exercising a justified rejection, free from the

criticized defect, and also holds the *balance of power as to the quality of the next action,* whether it shall continue the character of the self which is judging or the character of the self which is judged.

For the same reason, any psychological generalization about any person, which is an unwelcome generalization, becomes false just as soon as that person becomes aware of it. If some observer judges that I am "lazy and good for nothing," he may be quite right: but if he communicates that judgment to me, and I do not like it, he immediately becomes wrong, if only for that moment. It is the precise function of many such generalizations to make themselves false. When we become impatient with our neighbors and "tell them what we think of them," we often do so with the secret hope that these neighbors will stir themselves to prove that we have slandered them. Admonitions of parents to children are frequently charged with this benevolent prevarication. "You slovenly little rascal; your room is a horror"—is a type of language whose intention is to provoke the moment of repudiating self-consciousness. I should not like to insist that all education of character requires to be carried on by falsehood; but I do point out that to associate one's own rebuke with the child's self-rebuke (or vice versa), making conscious use of the non-identity between the condemned self and the self-which-condemns—that technique is essential in all ethical growth.

In brief, the distinction between a physical science and a mental science is this: the laws which hold good of physical nature remain valid whether I like them or not; the laws which can be formulated about mental nature remain valid only if I consent to them.

This is rather hard on the formulations of psychology and sociology, for these sciences are most successful just at the

points at which our conduct is most objectionable. They can most enlighten us by explaining our errors and irrationalities. This is, in fact, outside of elementary psycho-physics, the only region of our conduct that is capable of causal explanation. It is wholly impossible for any natural science to explain why in performing mathematical calculation you get the right answer. If you get the wrong answer, there must be a cause—fatigue, eye-strain, interruption, forgetfulness, psychical blindness, an anti-mathematical complex under which some people needlessly suffer, specific number-phobias—any one or more of a hundred intruding incidents may throw you from the right track. Only, the right track itself has no causes, because it is no function of any space-time variable: no alteration of temperature, latitude, barometric pressure, or of your own state of health affects or has any relevance to the validity of the famous formula two and two are four. The multiplication table is not a psychological phenomenon; our difficulties with it *are*. It is for this reason that popular treatises on psychology are filled with the record of human foibles, irrationalities, even vices: these are the things capable of explanation. The impression is strongly conveyed that man is after all a creature of irrational impulses and his endocrine secretions. What is not insisted on is the more important feature of human nature: not one of those irrationalities remains valid, once it is discovered, a moment longer than we wish it to.

For example, it is a generalization some psychologists risk that the average of men are governed more by emotional suggestion than by reason. From this law it would follow that if you wish to defeat an uncompromising opponent at the polls it is not necessary to show the error of his argument: it would be more judicious not to argue but to rouse prejudice against him. It is on this plan that the

publicity representative of a certain power company was said to have operated when, on being asked what he would do to defeat a state senator who wanted a publicly-owned power plant, he answered "Pin the Bolshevik label on him." One can very well believe that this use of the law of the irrationality of the Demos would be successful, but only up to a particular moment, the moment when the public concerned learns what is being done to them to deflect their votes: then one can imagine the speed with which the law ceases to work!

This phrase that I have just used is not quite accurate: no law ever "ceases to work," it merely ceases to apply. If I have a prejudice, I act on that prejudice, and anyone who plays on that prejudice will get my prejudiced reaction, which may be what he wants. But if my attention is called to the fact that I am operating on an unexamined prejudice, I do something like stopping payment on a check: *I suspend the prejudice,* pending examination, and the man who then appeals to it finds that it is not doing business as usual. This power of suspending the factual mental conditions on which causal laws take hold is what we mean by *freedom.* And because of this power, those pseudo-laws which pretend to say what human beings will do under various circumstances are always being invalidated by the unlimited resources of human nature. It is a prediction from such a pseudo-law that "Bombing civilian populations will lead them to sue for peace": it has been tried, first on Spain, then on China, then on England, and each time the resources of human nature suspended the reflex outflow of its own pain and terror. Freedom means no cancellation of genuine causal laws—such as that mental vigor cannot continue without food and drink and a sufficiency of iodine—and no denial of "tendencies," but it means that no such law operates *alone* within

the organism: it operates as a factor within a purpose. And no condition to which such a law could apply will remain, unless it has the continued consent of that purpose. This means that the total law of human behavior is *not causal,* though it contains a whole cable of causal strands, which remain there by consent. While it is possible to predict partial elements of behavior, especially when the subject being predicted about is unaware of the prediction, it is never possible to predict the conduct of a human being in its total shape.

And finally this means that the determinists are concretely wrong; and that men may reasonably be called upon to rouse themselves to deeds which, apart from their free decisions, will simply not happen in the universe.[1]

3. THE VALUE OF MAN

Now, if man is free in the sense we have defined, this freedom has everything to do with his value. At the moment of his free act, he is Archimedes: with his lever he moves the world. It is this capacity which makes the essential difference between the man, the animal, and the thing.

In his own eyes the value of man is closely connected with his freedom. I believe that Sir Charles Sherrington's phrase is a good one— it bears on his zest-for-life. But more than that, it bears on his self-respect and on his respect for the rest of his kind.

So with our attitude to others: we cannot fully respect those whom we do not regard as free. We have no obligation to share with them our emotional life. When a bar of hot

[1]The question, How freedom is possible, is one which opens at this point, and which requires from the scientific point of view an answer. The mathematics arising from the theory of relativity have, I believe, provided the necessary tools for this answer. I may here say simply that I find the considerations of Minkowski's Memoir of 1908 the most pertinent to our problem.

iron is drawn through a die to make wire, we are not concerned with the sentiments of the iron. When we propose to make use of a causal law in affecting the behavior of our fellow men, we assume the same position of separation from his emotions: of course, he *has* emotions and purposes where the iron has not, but we utilize them for our needs: it is the art of the exploiter to play on these emotions without being moved himself. He is in the literal position of the unmoved mover of Aristotle, but with a private axe to grind. Now the law of loyalty between man and man is that *no one has a right to move others except by way of his own emotion.* Honest persuasion seeks to come to agreement on values, that is, to induce in others the feeling which one entertains toward the ends of action: it respects the freedom of the other person, to be moved to action solely by his own estimate of worth. In this relation there is no opportunity for the unavowed use of causal laws.

Freedom, then, is a necessary condition of the value of man either in his own eyes or in that of his fellow man; and to treat men as if they had free wills is the first meaning of the term equality. Those who use psychological arts on others are implicitly treating them as inferiors.

Freedom, then, is a necessary condition of human worth. It is not, however, a sufficient condition. The worth of life has also something to do with the contents and objects of existence. What can we say on this point?

There are *two laws of worth,* or of meaning, which converge and cross in the human being: one, that value is an aggregate which is composed of valuable items, or of a balance of positive over negative items: the value of the whole comes from the values of the parts; the other, that value is a totality which descends from the whole to the parts: if the whole is worthless, the parts cannot retain their charm.

These rules appear inconsistent; and would be so if either claimed to be exclusive. In point of psychological effect, both do play a part in human self-estimation.

Unquestionably items of pleasure are important in conferring a positive value on the day's experiences. A spot of pleasure is not, as sometimes is said, a momentary affair: its destiny is to spread beyond its borders, and to raise the value-level of existence both by prospect and by retrospect. Likewise a spot of pain will depress a region of existence around itself—like the discomfort of an impending surgical operation; and a day's length of unrelieved pain would be able, if intense enough, to obliterate the whole worth of that stretch of existence. Pain may be said to hold a veto power over the value of living; though it is possible with long practice to encyst it and flow around it.

But, equally unquestionably, items of pleasure and pain do not make or mar the value of a life, for over every item of human consciousness there hangs the awareness of the whole as a frame for the part, and what the whole is passes a constant stream of comment on the part. We may equally say that the whole possesses a veto power over the quality of the part. That is the specifically human mode of consciousness: the animal does not worry about the whole of things, man is haunted by the question, What is the nature of the whole into which my doings fit?

An animal does not foresee its death (though the approach of death seems to arouse in some species a particular reaction of withdrawal); man plans his actions with reference to a probable time-limit, and establishes insurance on the basis of his "expectation."

Psychologically, it is easier for any man to say what the day's work has been worth to him than to say what his life is worth. We know the purposes of a day or a year better

than we know the purposes of a life. What do you aim at professionally? This question has a possible answer. What do you aim at for your life as a whole? This question will bother all but a few persistent speculators. How then do we come to guess the meaning of the whole?

To some extent, every man takes his cue from the drift of his crowd; what they consider worth doing we accept as worth doing. What do you call a good time? There is a general conception of a good time in the social air; you give a party based on that idea; you invite me to the party, and if I say this is not my idea of a good time you are not pleased with my originality and independence. You say to yourself, "a disagreeable and opinionated wretch." If one's feelings fail to flow in the moulds provided by the social ritual, the introspective exception may wonder whether something is wrong with him. If this almost passive valuing-with-the-crowd were the whole story, we should say that men impose on one another the attitudes toward war, hardship, death, which render these sufferers not intolerable companions: they insist on a certain stoical endurance, a reticence about grief, a willingness to retire from the active scene, and to transfer the burdens to others, which eases the desolating facts of finitude. Whatever a man may feel about his own extinction, he must not make life harder for his neighbors by transferring it to them: bear your burdens in solitude.

But here the individual man ceases to be either an animal or a merely social animal. He insists on thinking beyond mere thoughtlessness. Where numbness is comfort for a bad prospect, like the coma preceding death, he declines the comfort. He wants to know what is in store for him. This is his religion. It is his recognition that as a rational animal he cannot retain a sense of worth in his doings if the whole in which he is inserted has no significance. He does not need to

know what the significance is; he does need to know that it is there!

And it is here that *society also ceases to be merely social,* for it recognizes that the individual is right in making his own worth depend on the worth of the whole. It provides this support to his morale; it sustains the institution of religion as a public obligation.

It is often assumed that this is an indirect mode of lending sanction to its own requirements, as Walter Bagehot suggests, of establishing the "cake of custom." Religion thus becomes a temporary expedient for creating social stability. Freud has recently so exhibited its function. But these views omit one phase of the matter which is crucial. The most primitive religions address themselves to the solitary individual and his needs; and if the individual is only half awakened, only half extricated from the social context, these religions make it their first task to arouse him to separateness. The ceremony of initiation requires solitude, fear, and pain, and the establishing of a wholly individual relation to the other world. It is this sharpened individual self-consciousness which is then entrusted with the sacred lore of the tribe. Perhaps the societies which have *not* thus provided for the answer of the individual to his individual questions to destiny have perished; at any rate this is true, that society so far as we can trace it gets its support only as a consequence of first reassuring the individual of the worth of his individual life apart from society. It is as if society had acted on an instinct to the effect that it had to confer worth on the individual, even at the cost of destroying his absolute dependence on society, in order to retain an indispensable morale in regard to his own life.

If so, this is an early instinct which a late sophistication has attempted to overcome, for it is just the definition of

the totalitarian state that the individual can have no worth in independence of the state. And it is the nemesis of the totalitarian state that if this is the case the individual's own instinct truly advises him, though by way of premonition, that he has no worth at all.

But how can any valuation be placed on the world as a whole? If the worth of a whole life is more elusive to consciousness than the worth of segments of a life, how much more elusive is any worth of the whole process. Is it not more near the judgment of common sense to say that the whole is and ought to be a *background* of worth, not an object of worth in itself? The stage-setting may have its own aesthetic interest, but it ought not to interfere with the meanings of the play. The world is the stage-setting of life, not an independent object of value, apart from its own aesthetic grandeur and sublimity.

In allowing religion to enter as an affirmer of value in the whole scene, an affirmation usually contained in the conception of God, have we not admitted that there is no scientific support for the notion, perhaps not even a semantic support for the use of the term "meaning" in that relationship?

I reply in the negative. Though science cannot affirm the worth of the world, nor even define what might be meant by that expression, neither can it deny that worth. And, as in the case of freedom, it must remain open to the discussion of the problem, how is that worth possible?

4. THE WORTH OF THE UNIVERSE

On this point let me bring forward just a single and very simple consideration. It has to do with the distinction between the laws of Nature and the configurations of the entities in Nature. These two elements are involved in every

physical discussion, and they are independent of one another. It is evident that, however much we know of the laws of motion, these laws alone give us no knowledge of where any body will be at any time. In order to predict its future position we must have given the facts of its present position, its present velocity, and its relations to other bodies, in brief, a total pattern of these facts to which the laws are supposed to apply. The formulae of these laws must contain algebraic coefficients whose numerical values must be inserted in place before the formulae can give a numerical answer. Or, to put it in more logical language, the laws are generalities; the factual data regarding the position and so on of the particles are particulars. It requires the union of generals and particulars to constitute a real world. The attention of scientists is naturally drafted off to the observation of general laws. But some branches have likewise been devoted to the compilation of factual data, such as the Nautical Almanac, devoted exclusively to configurations of the stars.

The point of this distinction is that the configuration of the world is a variable independent of its laws, that is to say, that for any given set of laws, an infinite number of assumptions may be made about the configurations to which it applies. And furthermore, if we begin with a given set of laws and a given configuration, we may possibly derive from those data all the future configurations of the assumed universe, so that the given and subsequent configurations may be taken as a single block of history, after the mode of the world-line of Minkowski. But in taking any such total history we are unable to make the assumption that it will include *all the possible configurations* through which those particles could run. We can, in fact, demonstrate that in general it will not run through all possible configurations, by an infinitely large factor.

For example, our original configuration will be either symmetrical or unsymmetrical. If symmetrical, and if the laws in question, such as gravitation, elasticity, are such as apply to all bodies without discrimination alike, then all the subsequent configurations will be symmetrical. If it is at first unsymmetrical, all subsequent ones will be unsymmetrical. None of the configurations of the first infinite series will coincide with any of the configurations of the second infinite series. Hence it is not only possible but scientifically necessary to consider any state of the world as a configuration which "had to be" only in the sense that it follows from previous configurations, not at all in the sense that *any* configuration at all had to be. The history-as-a-whole did not have to be. Whether there is any inherent necessity in the laws themselves—a matter which has not been demonstrated—there is no necessity either in the amount or the distribution of the entities composing Nature. They cannot be deduced from the laws.

If then we may take it as established that no configuration is from the physical point of view necessary, no series is necessary. The idea of emergent evolution has been used as if there were an inherent "nisus" toward increasing complexity of form in Nature, so that the arrival at organic forms and at the human organism was, so to speak, on the cards of any material universe. This assumption has no mathematical basis whatever. The fundamental idea of emergent evolution is that a certain complication of arrangement will at various stages carry with it new and unpredictable qualities. But if no configuration is necessary, then no complication is necessary. In spite of Spencer's pseudo-principle of the "instability of the homogeneous," there is no necessity for any increase of complication in the world except by virtue of an earlier configuration which need not have existed.

I defy anyone to show that any original configuration of the world need have been either symmetrical or unsymmetrical. It has been natural to assume that, if the world had a beginning in time, it would have started as a spherical nebula, or some other symmetrical or homogeneous shape: if any aesthetic motive had presided at such an hypothetical first stage, that might have been the case. But in point of fact, if we are to appeal to probabilities in their complete disinterestedness regarding aesthetics, the symmetrical arrangement would be the most improbable of all. And if we were to begin with it, we could never escape from the clutches of its dreadful internal harmony. The only developing universe would have to be an irregular one; and of all the infinite number of irregular universes, only a vanishing fraction would have any such thing as a "developing" history, that is to say, one in which any feature such as you or I might be interested in would proceed in ascending stages, like the orthogenesis of the vertebrate eye, or of the horse's hoof.

Many of the irregular universes we might imagine would have the mathematical character of the recurring decimal, a certain number of places and then repeat. If this fate, which was accepted by the Stoics, and by Nietzsche, were to be escaped, it would be by a careful choice of the irregularity to be at first lighted on!

The upshot of this line of thought is simply this: that if anything we consider important were to come out of a universe operating according to natural laws, that something would have had to be impressed specifically on the historical configuration. This proves nothing to the effect that the configuration of the world has been chosen, because it has debouched in *us*. It leaves open to anyone to believe if he can that our appearance in the universe is an accident, because

configuration itself is an accident. He may be supported in his views by the circumstance that so far as we know, there are no other corners of the vast universe where such an arrival has occurred. And even if there were, it could still be an accident in the sense of an event devoid of either mechanical necessity or of purpose.

But the more the probability of the arrival of such a being diminishes in the scale of chance, the more forced does such an attitude appear outside the realm of pure science itself. The implications of configuration—let me put it thus —are what give the empirical foothold for the idea of purpose on the whole of things. This idea will be confirmed if we have any other grounds to affirm it. Meantime it will be for the scientist to recognize the existence of a blank, which may or may not be filled, without derogation to his own work. This argument I regard as a generalization, and to some extent a correction, of that put forward by my late colleague Professor Laurence J. Henderson.

And I have recently come upon an unsuspected confirmation. In a visit to the California Institute of Technology, in January of this year, I found the astronomer, Professor Fritz Zwicky, discoverer of many of the known super-novae, expressing his belief in a principle which he called the "postulate of the inexhaustibility of the aspects of Nature." He felt that this postulate has a high degree of certitude; and that on it is based our human confidence in the continued possibility of discovery, and of important discovery, since, however much has been learned, there remains an unlimited reservoir of fundamental truth still to be learned, and open to those who start off on new lines quite as well as to those who continue the lines already established.

The human implications of this principle are obviously tremendous. But I content myself with observing that it is a

principle of configuration, and as such one which need not be true; for no one can demonstrate that the world must have an inexhaustible wealth of aspects. If the principle is valid, as I suspect it is, it is another item in the invitation to consider the universe from the standpoint of its purpose or meaning, and thus to support the groping of the human creature, in many ways so humbled by the advance of our knowledge of the extent of the universe—his groping for an exterior corroboration of his self-respect.

Thus the two values are intertwined, that of the world and that of the human creature in it.

And we are not left to mere conjecture, nor the will to believe, to fill the blank space left by the scientific permission to believe in worth. For value is printed in at least one character of the world, which is everywhere. It is in that character of space and time which has so long puzzled both scientists and philosophers. Of them we can say with assurance that they do not appear to us as private or subjective characters but as public characters. We can by an effort of thought realize that they might be considered as "in us" without changing their momentary quality. But belief at once restores to them the character of being common, that is, of being shared with others. The very spontaneity of this unprovable acceptance of this space as our space, and of this world as our world (which again is among the things never explained or explainable to children and therefore must be there from the first) is the mark of an aboriginal impression of companionship in the experience of Nature—prior to human companionship, outlasting it, and outriding its vicissitudes.

It is because of this pervasive other life within Nature that we feel an "ought" in dealing with it. And because of that, science as an object of our united labors stands as a

body of truth which we ought to build and which shall abide when all its workers shall have passed on.

We may call this recognition of a Life and therefore a Meaning within Nature a religious recognition if we will —I regard it as empirical fact as well. In that case Science and Religion have at least one point of contact in affirming a value in the universe which in turn will confer meaning on the lives of free men. And from that point on, Religion may add yet other values without incurring scientific rebuke, because the principle of value will have been established, by Religion and Science together.

THE END

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